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AT&T steps up office attack

by Donald Kennett

AT&T has made another move toward the office automation market by signing a contract for Convergent Technologies to develop a new range of office automation products for its Information Systems company (formerly American Bell).

Convergent has set up a Special Products Division to handle the deal, which could be the first of several with other companies under which Convergent would develop products rather than just supply its own standard designs.

Both companies declined to go into detail about the number or precise nature of the products to be developed, but there have been many reports suggesting that AT&T's policy is to base its office automation products on its own processors, such as the eight-bit Mac 8, and on its own operating system, Unix.

AT&T was also reported last year to have been working on an office-orientated version of Unix, which would feature multi-tasking capabilities, screen windows and database management facilities.

An AT&T spokesman said the Convergent products would begin to be announced during 1984.

Its standard systems have so far been based on Intel and Motorola processors and Convergent has implemented earlier versions of Unix on its machines, as well as other operating systems including one of its own.

They are sold through more than 100 OEM suppliers including some of the biggest names in the computer industry, such as Burroughs and NCR.

In the UK, Convergent has agreements with six companies including Plessey and Zygal Dynamics.

The agreement raises questions about AT&T's agreement late last month with the Italian firm Olivetti, under which AT&T agreed to take $250 million worth of unspecified products over the 12 months from mid-1984, as well as to supply telecommunications products to Olivetti.

The most likely products for AT&T to take from Olivetti are office products, since Olivetti's main thrust is in this area and AT&T is just now entering it.

But the two companies have yet to decide what products Olivetti will supply. An Olivetti spokesman said the decision itself was likely to take six months or more.

Pauline Aiken, general manager of the new Special Products Division at Convergent, who was personally responsible for setting up the deal with AT&T, said she understood that Olivetti's agreement with AT&T would not be affected by her company's agreement.

Ultimately her main competitor was IBM, she said – which is what Olivetti chairman Carlo de Benedetti said when announcing his company's agreement with AT&T.

She said: "Basically our philosophy is that we are always looking for outlets for marketing our products.

"We are in R&D . . . high volume manufacture. This agreement is no different from any of the others we have."

IBM tells users to back US policy

by Philip Hunter

IBM UK has reminded 30 of its biggest customers that they must comply with US government export regulations when reselling large mainframes, or shifting them to another site. The company says it is not changing its policy toward users, but is simply warning them of the existing terms of their contracts.

"We are making customers aware of the position," said an IBM spokesman. "If they failed to comply it would be a matter between them and the relevant government agency."

But the Department of Trade and Industry is seeking an urgent meeting with IBM to discuss the warning to customers. UK government policy is to resist restrictions of legitimate trade by UK companies imposed by the US Export Administration Act, and to oppose its reinstatement.

IBM's move follows the stepping up of the US government's bid to stop advanced technology reaching Communist countries, and affects users of IBM 3083 B16 models and above.

The reminder came in a letter sent out last week by IBM UK mainly to multinational users which are likely to move big mainframes between countries. These users were told that they must obtain a licence from the US Embassy in London or the Department of Commerce in Washington if there were a change in ownership of a large mainframe, or if one were moved from one site to another.

The IBM Computer Users Association immediately reacted by arranging a meeting to discuss the issue and asked IBM to clarify the position.

"Every customer of IBM in the UK is free to sell equipment anywhere provided it is not against the laws of the UK," said IBM CUA chairman John Grant.

"It may be against US laws, but not against UK laws."

But according to John Foulston, chairman of Atlantic Computers, one of the biggest UK computer leasing companies, the letter is merely a clarification of the existing position, and will have no effect on most users. Atlantic was not sent one of the letters, Foulston said, because the company already complied with the export regulations.

"We have so far only moved two of these machines and re-licensed them ourselves," he added.

The only users to be affected by the IBM move would be small leasing companies which had not been bothering to obtain licences, said Foulston. For such firms it could prove a time consuming business to obtain the licences.

GRANT . . . "May be against US laws, but not UK laws."

BAXTER . . . "Lack of support reflects on us."

Commodore is accused of price fixing by UK retailer

by John Kavanagh

US microcomputer giant Commodore has been reported to the UK Office of Fair Trading by a London retailer, Crestmatt.

Michael Mehdi, head of Crestmatt, has accused Commodore of price fixing on the Vic 64.

Crestmatt sells the Vic 64 at £184.95, which is £15 less than any other dealer and way below the recommended retail price of £229.95. He plans to cut the price even more to £179.95. But he says Commodore has told him to sell it at the "normal" high street price of £199.95.

Medhi sells 400 Vic 64s a month. He specialises in this one product.

But Commodore denies that it is fixing prices. "We don't object to Crestmatt's prices, but our concern is that on those margins the company cannot provide service and support to users," said UK marketing manager John Baxter. "And if it can't support customers that reflects on us."

Baxter said the margin on a Vic 64 at £199.95 was under 19%. Overheads would represent 17%. A diverse company could offset the small profit with bigger profits from other lines, but Crestmatt had no other products.

Suspended tax officials take govt to court

by George Black

TAXMEN went to court this week to ask for the lifting of suspension notices served on them for refusing to operate computers.

The writ, issued by the Inland Revenue Staff Federation, is thought to be the first against a government department over the terms of employment and the result could set an important precedent.

The case was due to open in the High Court yesterday. Around 400 staff at 14 tax offices in the West Midlands have been sent home for refusing to take part in a pilot scheme.

The union says it accepts that jobs must be lost through computerisation, but it wants a guarantee of no compulsory redundancies. It argues that the reduction can be achieved through redeployment and natural wastage. It also wants other benefits for staff, including greater flexibility on holidays and retirement. But the Inland Revenue will not commit itself to a policy of no compulsory redundancies.

Negotiations broke down on December 21. Now the union has claimed that the suspension notices were a breach of agreed procedures and that computer operations are not part of their normal work. The Revenue says the staff have not been suspended but "temporarily relieved of duty" for not fulfilling their normal tasks. It says VDUs were already being operated as part of the normal work before Christmas.

About 15,000 jobs have been lost in the department since 1979, but so far none has been cut due to computers. However, a further 7,000 are scheduled to be lost by 1988, including up to 4,500 as a result of computers.

The union says it has been harshly treated as other departments have had to lose 5% against its 10%.

The computerisation of PAYE, announced in 1980, was then estimated to cost £150 million.

This week a Revenue spokesman said £200 million would not be an unreasonable estimate.

The contract was awarded to ICL to provide 47 2966 mainframes and 18,000 terminals.

Technology is UK lifeline says Owen

by Dave Madden

DR DAVID OWEN, leader of the Social Democratic Party, has urged the government to give more support to high technology industries in order to avert industrial disaster.

Speaking to Liberal candidates in Oxford, Owen proposed a "dynamic partnership" between government and industry. The alternative, he warned, "is to continue a slither toward the status of an under-developed country".

He argued that new technology would create jobs in the long term. Owen claimed that Treasury figures on a National Economic Development Office model of the economy revealed that a 2% rise in Britain's rate of technological advance could reduce unemployment by up to 850,000 over five years.

"We must kill the myth that technology results in fewer jobs, not more – along with the damaging assertion that the best thing the government can do is to leave the microchip to its own devices."

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Tramiel quits Commodore

by John Kavanagh

THE man who founded US electronics and microcomputer giant Commodore, and took it to a turnover of $1,000 million, has resigned.

Jack Tramiel has quit as president and chief executive for personal reasons. He will become a consultant to the company.

Chairman Irving Gould says Tramiel has "served Commodore brilliantly".

He says all employees and shareholders are indebted to Tramiel "for the foundation he has built for the next phase of Commodore's development".

A "very strong and talented" management structure has been set up under Tramiel, Gould says.

But US reports suggest some big stockholders were unhappy with Tramiel's autocratic management style in such a huge company. Last summer, for example, Bob Lane, head of North America operations, left after just seven months of working for the company.

Tramiel's reign saw the introduction of one of the world's most famous microcomputers, the Pet, in 1977.

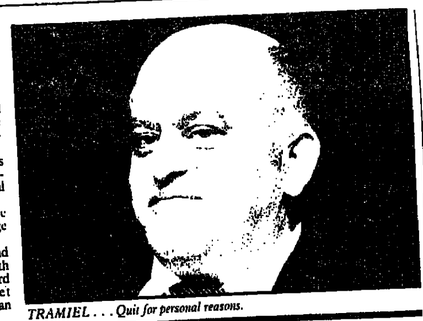
Since then turnover has grown from $50 million to $681 million in 1982-83. In the 1983 calendar year turnover topped $1,000 million.

Tramiel's name was once linked with a possible takeover of the UK's state-owned microelectronics firm, Inmos.

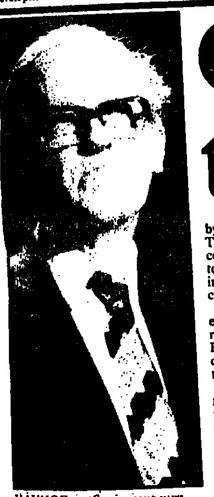
Commodore's Vic-20 was claimed to be the first microcomputer to reach sales of the magical million.

Commodore is set to introduce two new computers to its range this year.

The Commodore 264 and V364 are expected to come with bundled software, including word processing and spread sheet programs, and sell for less than $500.



TRAMIEL . . . Quit for personal reasons.



HAYHOE . . . Saving taxpayers.

Government plans to lead on standards

by Donald Kennett

THE government aims to impose common standards on information technology suppliers by overhauling its own internal telecommunications systems.

The move will save UK taxpayers £15 million a year and give £50 million worth of orders to the British information technology industry, said junior Treasury minister Barney Hayhoe last week.

Hayhoe was giving the government's response to a series of recommendations made in a report on its telecommunications policy made by consultancies Eosys and F International. The Treasury has been studying the report since its completion a year ago.

Hayhoe said that the report will provide the basis for a robust strategy for government telecommunications over the next decade.

The government's own information technology adviser, the Central Computer and Telecommunications Agency (CCTA), is to be reorganised to "accept the equivalent status of computing and telecommunications".

The report calls for the government to spend £2 million a year on pilot projects alone. This is justifiable, it says, by the scale of the benefits that can be expected from the use of new technology, by the complexity of some systems that may require a large user population, and by the changing structure of telecommunications budgets.

The CCTA acknowledges that spending £2 million a year on pilot projects would be comparable to what large private companies spend – it would be 2% of the government's £100 million annual phone bill – but it says that only £750,000 will be made available, at least until its management resources have been built up to the recommended level. (Eosys recommends doubling government telecommunications management resources, both by taking on specialist staff and by using consultancies.)

The adoption of open systems standards for data communication and switching is likely to be a major contributor to the rapid application of text communications and office technology, the report says. "The more that equipment conforms to proven technical standards, the longer should be the life of the equipment."

The government accepts that standards should be adopted as soon as practicable, and the Department of Trade and Industry's Intercept Strategy should be used to anticipate emerging ones. The CCTA has agreed to be inform suppliers as early as possible which standards will be mandatory requirements in procurement contracts.

Priorities for equipment to be standardised before 1985 include

■ Continued on page 2

Prestel buys set of 32-bits from GEC

PRESTEL is to buy a new set of 32-bit computers from GEC to replace the 16-bit GEC computers the service has been running on since it started in 1978. GEC won the order against competition from Sperry, which launched its system in Amsterdam last year, after IBM had dropped out of the bidding. The new machine will be installed over the next few years.

840 jobs at risk

PLESSEY is reorganising its public telecommunications manufacturing, putting 840 jobs at risk. Its public exchange factory at Lamberhead, Wigan, which employs 240 people, will close in May, while production of electromechanical and semi-electronic exchanges will cease at South Shields by the end of August 1984. Plessey Circuits Ltd will continue to manufacture printed circuit boards at the same site, but 600 jobs are threatened.

Memorex deal

BURROUGHS' subsidiary Memorex is close to a £5.5 million deal with the UK Cawdor Group, owners of micro maker Future Computers and distributor Excel. Heads of agreement have been signed for contract worth £3.5 million for Memorex to build Future kit to sell worldwide as a communications product.

Thorn profits rise

THORN-EMI doubled profits from £27.6 million to £55.8 million for the six months ended September 30 1983, but its shares slumped 25 pence to 652 pence on the news. Its high technology divisions, which include Software Sciences, Datasolve, and Thorn-EMI Datatech, continued to do well in the UK.

HP denies BBC journalists' accusations

by John Riley

HEWLETT-PACKARD last week dismissed reports that its electronic newsroom system at the BBC cannot absorb and process news material fast enough.

The allegations were made in the national press as fur started flying in the dispute between the BBC and the National Union of Journalists (NUJ) over new technology. In this case, the technology is not so new, as it is exactly one year ago this week that the Hewlett-Packard system went live at BBC's *Breakfast Time* show.

"We have had no serious complaints from the BBC, and the system has been used on Breakfast TV for a year without any hiatus," says Ian Blaby, Hewlett-Packard's sales manager responsible for the BBC account. "The technology they're arguing over is irrelevant – they'd argue over it whatever the technology used."

Earlier this week a spokesman for the BBC Television News Chapel of the NUJ, who has used the system with *Breakfast Time*, said that there had been a number of teething problems and that the system was having difficulty coping with requirements.

Part of the problem was attributed to insufficient training during the rush to go on the air.

"In the hurry to bring in computers last year, the BBC agreed that there would be an increase in work but that it would review the situation with a view to increasing salaries after six months."

According to the spokesman, at the end of last year the BBC decided not to offer a continuing salary increase, but to press for a one off payment. The NUJ is holding out for a continuing payment such as that given by ITN or TV-AM to its journalists who use computers.

At the time of going to press, the NUJ had voted to black the BBC newsroom system and to start industrial action.

Independent Television News (ITN) last week announced that it has acquired the controlling interest in Californian company Basys for an undisclosed sum. Basys' main product is Newsfury, the computerised newsroom system used in the Channel 4 newsroom.

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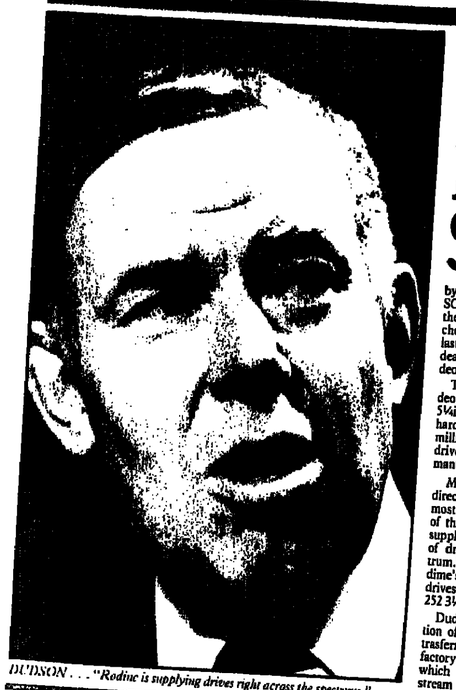
Rodime pulls off $50m deal



DUDSON . . . "Rodime is supplying drives right across the spectrum."

by John Riley

SCOTTISH company Rodime, the world's leading 3½in Winchester disc drive manufacturer, last week announced a $50 million deal with US micro-maker Televideo.

The contract, to supply Televideo with its range of 3½in and 5¼in hard disc drives, follows hard on the heels of a recent multi-million pound order for 3½in drives from another US micro manufacturer, Compaq.

Malcolm Dudson, Rodime director of marketing, says: "Almost more significant than the size of the contract is that Rodime is supplying Televideo with a family of drives right across the spectrum." The contract covers Rodime's 42 Mbyte RO 208 5¼in drives through to its 10 Mbyte RO 252 3½in drives.

Dudson confirms that production of drives for the US will be trasferred to the company's new factory at Boca Raton, Florida, which is expected to come on-stream in the second quarter of this year.

He adds that the US contracts fall into Rodime's plans for expansion at Glenrothes. The plant there was recently expanded to 80,000 sq ft and its workforce boosted to 400.

Since Control Data's 3½in drive, the Cricket, went back to the drawing board, Rodime has been the only manufacturer producing 3½in drives in quantity. "Rodime's 3½in RO 350 drives are rapidly becoming the de facto industry standard for sub-5¼in Winchesters," says Dudson.

Dudson confirms that Rodime is currently talking to a number of manufacturers, but adds: "We won't take any orders beyond our capacity."

He will not comment on whether there are any plans to go for a London Stock Exchange listing. Rodime has been publicly quoted on the New York over-the-counter market since 1982.

In November 1982, Rodime signed an £8 million deal to supply ICL with 5¼in drives. Dudson cannot say whether Rodime will also be supplying ICL with 3½in drives.

Hewlett-Packard opens French line

by Jack Gee

HEWLETT-PACKARD will become France's leading microcomputer manufacturer this year, thanks to the opening of a production line for the JP150 model, according to Kleber Beauvillain, president of Hewlett-Packard France.

Deliveries from the company's factory at Grenoble, in the French Alps, will begin in February and the touch-screen units will be shipped to all parts of Europe.

"We are going to be France's top manufacturer of microcomputers and its biggest exporter," says Beauvillain. "The HP150 will make a major contribution to France's exports efforts. It will help improve the balance of payments problem in microelectronics."

Hewlett-Packard's product range in France covers personal computers, networks and terminals. "We shall be selling more and more of our products, (except for the HP150), to the United States. The American market has a lot to offer the French microelectronics industry," says Beauvillain.

For fiscal year 1983, ending October 31, Hewlett-Packard France exported 36% of its turnover (FFr 855 million out of a total of FFr 2395 million) while imports counted for 44% of turnover.

This year the French subsidiary's target is to raise exports 50% of turnover. Beauvillain says a special effort is being made in the field of investment. FFr 300 million are earmarked for 1983, of which FFr 166 million has already been invested.

This will include the purchase of a new factory site at L'Isle-d'Abeau near Grenoble at the beginning of this year.

However, Beauvillain says that Hewlett-Packard's position is low – only 2.7% of turnover compared with the corporation's 6% average for its worldwide activities.

Beauvillain also complains about the difficulties encountered by Hewlett-Packard in reaching joint venture agreements with French firms.

The company had to turn to an Italian firm, Telettra, to reach agreement on establishing communications standards between Hewlett-Packard Systems and its partner's TLC-10 PABX changes.

Ironically, Telettra has obtained its TLC-10 licence from Framatome-Jeumont-Schneider firm, which refused to do business with Hewlett-Packard.

Makers are up in arms over cuts

by John Kavanagh

THE government is cutting back on funding that helps UK computer manufacturers try out new systems on users – even though the industry says it is one of the most important support schemes.

Under the pre-production ordering scheme, the government pays the manufacturing costs on the first 10 or 20 units and places the products with suitable users.

The scheme is part of the government's support for innovation projects, which was granted an extra £40 million, to be added over three years, in last year's Budget.

The overall funding is not being cut; money is transferred from the pre-production ordering scheme to pure research projects.

"The scheme is very widely used and very popular among manufacturers," said David Broad, chairman of the British Microcomputer Manufacturers Group.

"This will especially hit companies involved in developing new solutions to problems. It will be a big disappointment to many."

SINCLAIR . . . "Redressing the balance."

Sinclair's fourth finds new fields

by Nuala Moran

SIR Clive Sinclair launched his fourth computer last week, the Sinclair QL – which stands for quantum leap.

Billed as a professional computer, it has a Motorola 68008 chip, a 32-bit processor with an eight-bit data bus. It also has 128K RAM, two built-in 100K QL microdrives for mass storage, and a high resolution graphics in up to eight colours, full-size keyboard. It comes complete with four application programs at a cost of £399.

"The QL breaks into the technical, professional and senior executive market for us," says Sinclair. "But it has wide applications for individual use."

Sinclair also has an eye on the BBC Model B micro market. Acorn's contract with the BBC comes up for renewal later this year (see page 6). "The BBC moves in its own way so we don't know what will happen. But we would like to find some way to redress the balance. At the moment, one company gets so much free publicity," says Sinclair.

A new operating system, QDOS, was designed for the machine. Its most significant feature is multi-tasking, with a full window capability so that up to 10 programs can be run on different parts of the screen simultaneously.

The QL also features SuperBasic. This is Sinclair's rewrite of Basic without the tears, in that it is procedure-structured, extendable and has an execution speed which is independent of program size. According to Searle: "It puts right all the things that are wrong with Basic. In fact, it's only called Basic at all because that is what people know."

The applications software consists of four programs, QL Quill word processor, QL Abacus, a spreadsheet, QL Archive, a database and QL Easel, a graphics package.

Searle claims that comparison with any other machine is "almost meaningless". "We tried to resist drawing comparisons with other machines, but we did look at four popular machines and tried to estimate the cost of having a similar system on them."

He estimates that to get similar memory and mass storage on the BBC Model B would cost over £1,800 and for the Apple IIe, the ACT Apricot and the IBM-PC it would be over £2,000.

"There is a mass market for professional computers," says Searle. "But they cost at least £2,000."

At first, the QL will only be available by mail order, but Sinclair says that by the second half of the year it will be available in retail outlets and throughout the world.

The machine will have a $499 price tag in the US and will be sold by Sinclair's own marketing operation, rather than through Timex which sells the Spectrum.

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Government gives lead

■ From front page

computer and terminal interfaces, PABX features and call logging information formats. Suggested future requirements include local area networks (1985), videotex and teletex (1986), file transfer and virtual terminal protocols (1987), digital access from PABXs to public networks (1985-1987) and digital access from workstations to PABXs (1988).

The CCTA accepts the need for greater emphasis on open systems standards, despite the fact that it is already involved in the DoTI's Focus committee which exists to promote the use of standards.

The strategy means that government departments will have a sophisticated information technology infrastructure to support increased productivity, Hayhoe says. It means a firm commitment to replace existing facilities with an integrated voice and data network, and endorsement of the CCTA's role in policymaking and management, backed by substantial resources.

He says: "Ten years ago there were only about 250 major mainframe computer installations in central government and very few terminals. Now there are around 700 medium to large computer systems, 900 smaller ones, and no less than 10,000 data terminals.

"Moreover, the number of data terminals will rise very sharply."

Eusidic urges more database openess

by Philip Hunter

PRODUCERS of public databases are urged to make their information more freely available and to conform to normal pricing standards.

New guidelines agreed by 200 major European users and suppliers of data implore the database producers to make information readily available.

The European Association of Information Services (Eusidic) is to issue a series of recommendations to suppliers of publicly-available databases, with the aim of making the information more accessible, cheaper and more accurate.

Suppliers should be responsible themselves for the accuracy of the information they provide for databases, says Eusidic chairman Harry Collier.

Eusidic is a non-government organisation funded entirely from the annual subscriptions of £245 paid by each member.

Some of the members in the organisation include IBM France, Control Data, ICI, Shell and Unilever.

"The idea is not so much to standardise, but to agree what's there," says Collier.

"It is an attempt by major producers to agree on fair trading standards."

The group was established 12 years ago in an attempt to get database standards moving.

Now members meet privately every spring to discuss technical matters, with an open conference in the autumn.

The group is also involved with lobbying organisations such as the European Commission on an international basis.

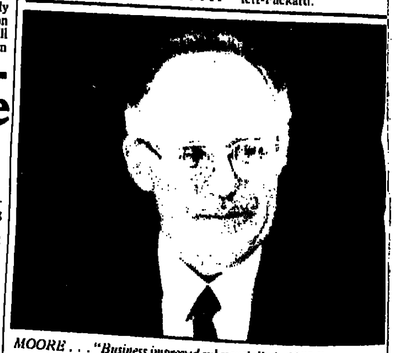
Another of its activities is to alert members to developments in their own countries, such as the Data Protection Bill presently being debated in the UK.

"We are also interested in the data protection area, ensuring we know exactly what is being done," says Collier.

Eusidic would urge members to lobby their governments if legislation attempted to restrict access to data, Collier adds.

"The main barriers to data access are in the telecommunications area, via tariffs and restrictions," says Collier.

Eusidic is in the process of getting involved in development of telecommunications standards.



MOORE . . . "Business improved substantially in 1983."

Record results prove semiconductor health

by Dave Madden

TWO US semiconductor manufacturers have given further evidence that the world semiconductor industry is now well out of recession. Intel has reported 1983 profits more than trebled, and it passed the billion dollar turnover mark for the first time, while Advanced Micro Devices made record profits in its third quarter.

Intel's net profit for the year to December 31 was $116 million – against $30 million in 1982. Turnover increased from $900 million to $1.1 billion in the same period. In the fourth quarter net profits were $47 million compared with $8 million for the final quarter of 1982.

Gordon Moore, chairman and chief executive officer, says: "Our business improved during 1983."

Advanced Micro Devices, itself a second source of Intel's 808 family processors, reported profits up from $6.6 million to $20.2 million, on turnover ahead 70% at $154.6 million in the quarter ended December 25, 1983.

ICL profits look rosy

by Dave Madden

IN an aggressive and optimistic speech at ICL's annual general meeting, chairman Sir Christophor Laidlaw said he expected further growth in profits this year – though they will be modest in comparison with the 92% increase in profits in 1983.

Laidlaw indicated that orders over the past three months will "show a healthy improvement over the same period last year". But he warned that the benefits of this are unlikely to be translated into revenue until the second half of the 1984 financial year.

Laidlaw was able to point to ICL's collaboration with Mitel with some satisfaction, rather than having to make excuses for the deal. ICL gained approval for Mitel's SX 2000 digital exchange, sold here as the DNX 2000, from British Telecom last December.

As far as its 2900 machines are concerned, Laidlaw said that ICL hoped to maintain demand for the product with new software systems – Quickbuild and Decision Support – and plug the gap to DML and Estriel. Quickbuild is a series of software productivity and design tools for data processing personnel. The Decision Support software is designed to give user-data processing managers access to data.

Laidlaw said that he appreciated shareholder's disappointment with ICL's miserable share performance, down 40% until last year, for which the company is partly responsible by admitting that it will not produce the same profits growth this time. The market responded favourably to Laidlaw's statement – ICL shares rose 7p to 59p.

The company is still smarting from the adverse press comment after its 1983 results were released, which suggested that its recovery was under threat. It has launched an advertising campaign to try to repair the damage by explaining the progress it has made since 1980.

Sir Michael Edwardes, who takes over from Laidlaw on April 2, said that he was "amused" by suggestions that his appointment would lead to policy clashes with managing director Robb Wilmot. He stressed that chairman and managing director have quite separate functions.

IBM streamlines mainframes

by Keith Holder

IBM is streamlining its System 36 and System 38 mainframes, with new models and price cuts. It hopes to rationalise these product lines in advance of additions to the ranges planned for later this year.

The internal capacity of the System 36 is doubled, while models 3, 5 and 7 of the System 38 are withdrawn. Five and seven MByte versions of the model 8 will also disappear.

The System 36 can now attach the IBM-PC and PC/XT as a workstation.

Price/performance has been pepped up by price cuts of up to $32,500 on some models, though not all are affected.

IBM commentator Mike Newman, of Interactive Database Systems, welcomed the announcement.

"They have provided users with a rational upgrade path, without having to swap around too many machines," he said.

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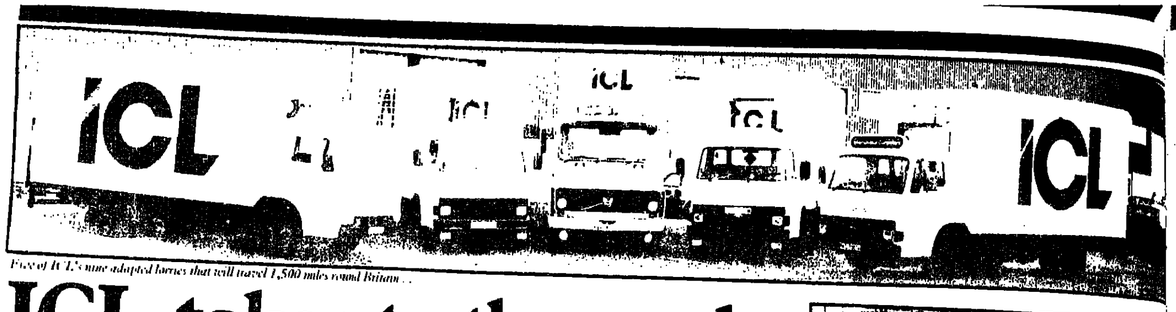

Five of ICL's nine adapted lorries that will travel 1,500 miles round Britain...

ICL takes to the road

by John Riley

ICL AIMS to attract 10,000 top decision makers to the five month-long road show it launched last week.

The show, which will travel to eight locations around the country, is designed to illustrate how ICL's systems interlink in a working environment. The actual products take a back-seat.

"This is not a product show," explained Tim Barnsley, the show's manager. "It is to give invited decision makers an overview glimpse of how our systems interact. That is why the mainframes in the 'engine room' are out of sight."

According to Barnsley, the show involves £2 million worth of computers, 60 kilometres of cable, and "enough power to supply a village of 200 people".

The display is organised into booths, each of which represents a different activity of one hypothetical company. The aim is to show how changes in one department and their ripple effect on other departments can be interlinked using an ICL computer system.

"Our purpose is to explore some of the common problems found in most organisations and to show ways in which they may be solved by the effective use of information technology," said Alan Rousell, director of ICL's UK division.

The hypothetical company has seven main departments – finance, sales and marketing, design and development, production, retail, and personnel, – which are manned by 80 well-rehearsed ICL staff.

A wide range of equipment is used in each booth, linked to either a 2966, ME29 Model 54 or System 25 Model 71 machine, and 34 ICL application packages are employed.

Martin Scott, ICL's product marketing manager for the UK, would not say how much the show is costing, but believes it will pay dividends: "You have to offset the cost against the expense of going out to, say, 1,500 top prospects," he said.

Venues for the show are London, Blackpool, Gleneagles, Birmingham, Leeds, Newcastle upon Tyne, and Cheltenham.

... and how they look when they arrive at the show.

SALES BRIEF

Five systems to aid kidney patients

WEST Midlands Regional Health Authority has ordered five computer systems from London-based Clinical Computing, and the first is now installed.

The systems are for use in accumulating and analysing data on kidney transplant patients.

Same again

CENTRAL Statistical Office has ordered two more 68000-based computers from Bleasdale Computer Systems to run Unix applications including multi-user word processing, spreadsheet analysis and relational database management. The office now has three Bleasdales, which can be hooked up to bigger Sperry computers via RS232 ports.

$1m contract

DARKCREST has chosen Century Data Systems to supply 8in fixed and removable 80 Mbyte disc drives for its Thunderbolt II desktop 68000-based Unix system, in a $1 million contract. The new micro offers up to four Mbytes main MOS memory, and prices start at about £10,000 for a complete system.

Pay package

RANK Hovis McDougall, the multinational food conglomerate, has picked an accounts payable package supplied by Management Science America for paying wheat suppliers. The package is to be installed on the group's IBM-compatible NAS mainframe running the MVS operating system, at the computing centre at Harlow, Essex.

Nixdorf repeat

NIXDORF has sold a second mainframe to CP Pharmaceuticals for order processing and management control. The new 8890 Model 55 will be linked to the existing 8870 Model 10 via distributed lines and modems, and will run Nixdorf's Comet business software.

First UK dealer

UNISON Technology, the exclusive UK and Europe distributor for the Altos range of multi-user micros, which run the Pick operating system, has appointed its first UK dealer, Tripont Associates Systems in a contract worth £250,000. The Altos micro was unveiled this week at the Which Computer? show in Birmingham, and the intention is to appoint several dealers to attack vertical markets – shipping transport and freight forwarding in the case of Tripont.

Police order

BURROUGHS will supply South Yorkshire Police with 10 B20 series microcomputers for administration of two incident centres. The police used Burroughs' micros on the triple murder enquiry at Dore, Sheffield, with the help of BOS/Auto Index, a storage and retrieval package.

Zilog deal

ZILOG UK has swung a £1.3 million deal to supply Scandinavian software house Metric Group with Unix systems. The contract is for a minimum of 100 Zilog Series 8000 micros, which will go to various organisations throughout Scandinavia, including the Swedish defence department. Product support will come from Zilog's north European base in Maidenhead.

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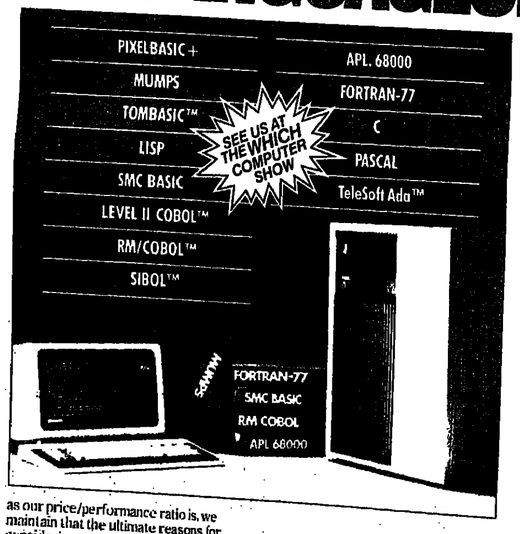

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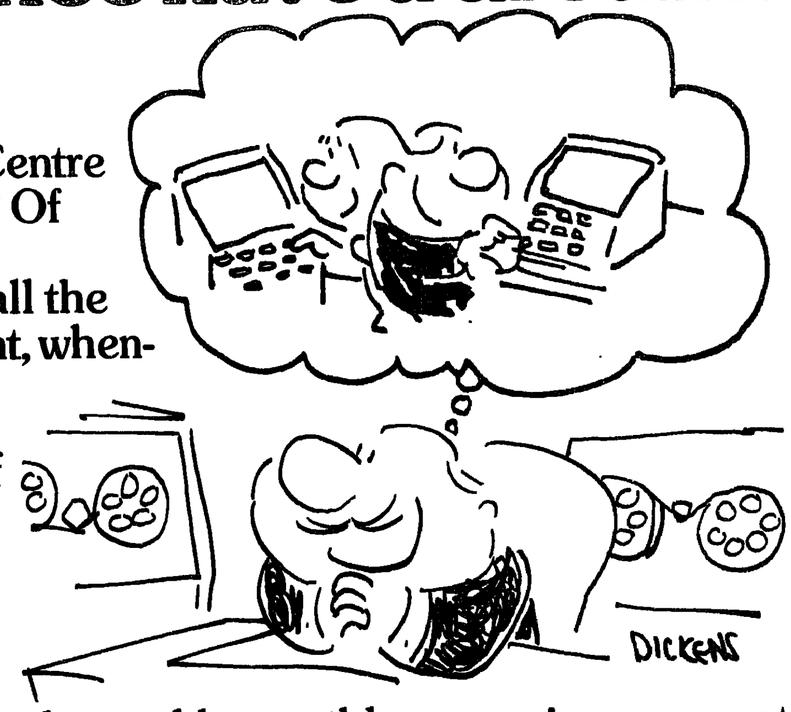

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Logica expects to double production

by Philip Hunter

LOGICA VTS double production at its Swindon factory this year after a clutch of big orders for its VTS 2200 business system.

The company has supplied the French Ministry of Justice with 130 systems worth £1 million in the last six months, with more installations at French law courts expected this year.

Total sales of the VTS 2200 were about £10 million for the year ending June 1983, but production is now running at 160 a week. This year the product is expected to earn over £20 million.

ICL buys 120 of the 160 units produced each week as part of its OEM agreement with Logica, and sells essentially the same product as the DRS 80801. Some of the products are sold via ICL to British Telecom's Merlin office automation division, which resells them as the IT Merlin 3300.

The VTS 2200 was originally developed in a joint agreement between Logica and Nexos, the now defunct government-owned office automation group.

Gestetner had offered to buy Nexos, but lost interest when a reading of the small print of the contract involving the VTS2200 revealed that Logica would keep full manufacturing rights for the product.

ICL initially took marketing rights before signing the OEM deal with Logica.

The VTS 2200 is one of the few 16-bit word processors available.

BURDEN . . . Machine will be free of production problems.

Optim extends range

by Philip Hunter

BUSINESS micro distributor Optim MCS this week extended its product range by launching a 68000-based UK-built machine at the Which Computer? Show in Birmingham.

The computer, to be sold with a range of accounting, office automation and spreadsheet software, was a joint development between Optim and the Armstrong engineering group.

Armstrong will build the machine in Dudley, and Optim will have the sole UK distribution rights. Mike Burden, Optim joint managing director, says that the deal has yielded a machine that will be free of production problems, since the Armstrong group, which turned over £100 million last year, has plenty of production capacity.

The machine runs the Unix and BOS operating systems, along with the high level languages Cobol, C, Fortran, Basic and Forth.

The Optim also runs the Uniplex office automation system.

Report raps poor university set-ups

by John Riley

BRITISH universities need 50,000 workstations worth up to £100 million over the next 10 years to supply industry with computer literate graduates, says a recent report.

The report, published by a working party set up by the Computer Board for Universities and Research Councils to investigate computer facilities for teaching in universities, hits out at poor university computing facilities, and says that at least one student in five should have a workstation by 1990.

"Existing facilities are inadequate, both in quality and quantity to produce graduates who will be able to play a leading role in the technological future of the UK," according to the Board.

Deficiencies in university equipment are listed: they include insufficient terminals and file store, poor response times, and the need to replace batch systems and inadequate graphics facilities. Another fault identified was poor cooperation between universities on software development.

The report recommends minimum requirements for a university workstation. The Computer Board, which funds university computing in the UK, has considerable influence over manufacturers, and has already insisted that minicomputers and mainframes used in universities should conform to its "coloured book" open system standards.

The university workstation should have the computing power of a Motorola 68000-based machine, at least 256 Kbytes' store, at least a 512 Kbytes floppy disc drive, and should link v... Ethernet or X25 local area ... works.

It should also have stand... high level language compilers ... colour graphics, and shou... support multiprocessing (with ... Unix-like operating system), a ... tual memory facility, and th... ability to carry out process... process communications over ... network.

The source code for all th... system software should be ava... able, and the initial price for th... complete workstation should be ... £1,000-£2,000.

The report also calls on the gov... ernment to follow the example of ... the US tax authorities and allow ... companies tax relief on computers ... and IT equipment which are given ... free to universities.

BBC aims for wider literacy

by Donald Kennett

THREE new add-ons for the BBC Micro are on their way this spring as the start of a massive expansion of the BBC computer literacy project. A new generation BBC Micro will follow, plus further telesoftware broadcasts, software on cassette and disc, books, radio and television programmes.

The add-ons are being developed by Acorn Computer, the maker of the current BBC Micro. They are: a £103 viewdata adapter due to go on sale at the end of March, a £195.50 6502-based second processor board that will allow some programs to run much faster, and a Z80-based second processor board that will allow the machine to run CP/M software.

The second processor boards are due in April and May and the Z80-based one is expected to cost between £300 and £400.

Aubrey Singer, managing director of BBC Television, said that the Corporation was talking to several manufacturers about the new machine and that a decision would be made in the next few months. Asked whether it had considered launching a less expensive machine, he said: "No, we haven't." The BBC Model B costs £399.

John Radcliffe, executive producer of BBC Continuing Education Television, said: "That need is well served by machines already in the market. The value of our ...machine is in the education mar... ket, where the need for an expan... dable machine is borne out by our experience."

He went on: "A very large thrust of our publication activity is going to be in support of education, where first, not many pub... lishers are making much money out of it, and secondly, there is a shortage of good software.

"Telesoftware is a revolutionary and extraordinarily important de... velopment which is only at its be... ginning. It has been running since September and over the next year you can expect big developments."

The bulk of the telesoftware sent out so far is transmitted conti... nuously as part of the BBC's Ce... fax teletext service and a spec... teletext adapter is needed to ge... the programs into the micro.

But the BBC has experimented with sending data as an audio sig... nal during an ordinary television or radio broadcast, usually late at night, and this is to become a regu... lar feature of programmes in the future, starting with the Chip Shop programme on Radio 4.

STC aims for Xtra boost

by Keith Holder

THE microcomputer division of STC has challenged other manufacturers to submit their micros to an independent panel to discover which is the most IBM-compatible.

STC claims the Xtra, which it launched in the UK last week, is the most IBM-compatible machine on the market. The Xtra, which is manufactured by US multinational ITT and marketed by STC in the UK, is able to run MS-DOS and any IBM or third party software package, together with most peripherals, STC says.

To prove its point, STC has invited makers of other "IBM lookalike" machines to submit them for an independent compatibility test, with results to be published later this year.

The arrival of ITT's Xtra microcomputer does not mean the end of the road for the company's earlier 3030 system, according to Stuart Goldberg, marketing manager of STC business microcomputers, which markets both systems in the UK.

He admitted, however, that failure by ITT to deliver a promised 80286-based add-on board to convert the 3030 into a 16-bit IBM-PC compatible system made the product less attractive now that Xtra had been launched.

Xtra will be available in the UK in three months' time, and will run under the BOS operating system, used on the 3030, as an option.

Delays with the 80286 board were due to failure by Intel to supply the chip, said Goldberg.

Xtra, the first of a planned range, should not suffer similar troubles, said Goldberg, as it is entirely built by ITT in the US. Possible European manufacturing sites are also being looked at.

Although marketed by STC Business Microcomputers, a new division set up specially to cover all ITT's micro machines, most sales of Xtra are expected to come from a dealer network.

Goldberg said that dealers would be free to stock other companies' compatible software and peripherals.

GOLDBERG . . . Xtra does not mean end of road for earlier system.

Thorn-EMI sets up Televideo arm

by Philip Hunter

THORN-EMI has acted quickly to handle distribution of Televideo business computers, following its appointment last week as exclusive UK distributor for the Televideo machines. It has set up a new distribution company, Computeraid, headed by Pat Harvey, formerly North European marketing director at Televideo.

Meanwhile, the previous three Televideo dealers, Midlectron, Encotel and Colt Computers still hope to become Televideo OEMs and retain their dealers. But Midlectron would not comment on the outcome of a meeting with Televideo last week.

"Thorn-EMI wants us to become an OEM, but we're not sure that we will," said Midlectron operations manager Chris Base.

Televideo vice-president for international sales Alan Pratt said that Thorn-EMI had been chosen to replace the three existing UK distributors because of the need to have a big name behind a renewed push in Europe.

"Thorn-EMI is better known than Televideo in the UK," he pointed out. "We also hope that is only a temporary condition."

Platt added that Televideo intended to phase out the previous three UK distributors as far as computers are concerned, but that they would be retained for distribution of terminals.

Televideo's market penetration in the UK has so far been disappointing. But according to BCU Computers, originally one of Midlectron's dealers for Televideo computers, this had not been the fault of distributors or dealers, but of Televideo itself for having out-of-date software. "The main problem is that the operating system is not up to date," said a spokesman.

But Televideo's TS 1605 micro will become available in the UK next month, offering IBM PC-DOS compatibility and applications software written by Thorn-EMI at around £2,600 for a complete system.

Televideo chairman Philip Hwang claimed that this new machine offered more IBM compatibility than the TS1603, which would run MSDOS but not PC-DOS programs.

Xerox boss joins DEC

by John Kavanagh

THE head of computer science research at Xerox, Robert Taylor, has joined minicomputer leader Digital Equipment to set up the company's third advanced research group. And Taylor, who has been with Xerox for 13 years after pioneering work elsewhere in the industry, has taken three of his staff with him.

Taylor's move reverses the trend at DEC, which has lost several top people on both sides of the Atlantic after a year of poor results.

DEC's new research group will be set up in the next few months in Palo Alto, California — home of the Xerox Parc research centre where Taylor worked.

Samuel Fuller, head of research and architecture at DEC, said the group would work on "advanced hardware and software", but he gave no further details. It would work closely with a similar centre in Los Altos. Work there included development of a "future-generation, high-performance workstation" and a new operating system architecture.

There would also be close contact with the other research group near DEC's headquarters in Maynard, Massachusetts, Fuller said.

Taylor's arrival follows the departure of leading staff, including Darryl Barbé, head of the UK subsidiary; Lawrie Cattell, head of personal computers in the UK; and Arthur Campbell, manager of terminals and microcomputer retail distribution in the US.

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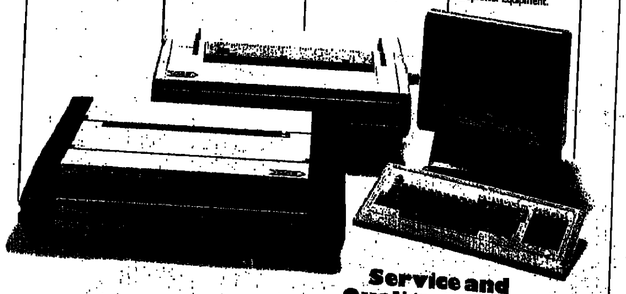

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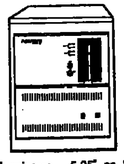

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MICRO NEWS

SHELTON . . . Designed and built the Sig/Net micro.

Data Dynamics buys its way into micros

by John Riley

SHELTON Instruments, the London-based microcomputer maker, has sold the manufacturing and marketing rights for its Sig/Net machines to peripherals manufacturer Data Dynamics.

The deal frees Shelton Instruments to concentrate on innovation and takes Data Dynamics into microcomputers.

There is a link between the two companies. Data Dynamics is a subsidiary of Innotec, the investment company run by David Sainsbury, which also has a small stake in Shelton Instruments.

Shelton Instruments started as a consulting engineering organisation run by managing director Chris Shelton, who designed and built the eight/16-bit Sig/Net multi-user micro. In two years, Shelton sold 2,000 units and finished the last fiscal year with a £2.5 million turnover.

The Sig/Net series has sold well in the business and educational markets, and its robust construction has been proved by continuous use over many months in dusty conditions on archaeological sites in Sri Lanka and the City of London.

Data Dynamics, which manufactures printers and distributes ADDS' visual display units, was taken over by Innotec two years ago. Data Dynamics had been put into receivership after its chief accountant was jailed for 18 months for embezzling £39,500.

The company is now firmly back on the rails and in 1983 had a turnover of £3.5 million. "The acquisition of the Sig/Net rights will add £3-4 million to our turnover in the next 12 months," said Data Dynamics' marketing manager Richard Steggall.

"Shelton Instruments will retain its own identity," said Steggall, "and has reverted to its original role of innovating, and dreaming up brilliant ideas, where its strengths lie. The company is not confined to developing Sig/Net for us."

The deal will also boost Data Dynamics' export drive. It currently exports 35-40% of its products, according to Steggall, and could manufacture Sig/Net microcomputers in France through its sister company Peripheriques, also owned by Innotec.

Shelton Instruments has been actively selling to France, and was one of the seven UK exhibitors at France's largest computer exhibition, Sicob, in Paris last autumn.

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AT&T plant goes on

by Philip Hunter

AMERICAN Telephone & Telegraph will next month resume construction of a $400 million high volume microelectronic component plant. Two years ago AT&T abandoned it because of a slump in the market for integrated circuits.

The 800,000 square-foot plant in Orlando, Florida, is now due to be finished early in 1985 and will then be producing 256K dynamic RAMs and other large scale integrated circuit devices.

In January 1981 work was begun on the plant by Western Electric, then a subsidiary of AT&T and now subsumed into the larger subsidiary AT&T Technologies as part of divestiture plans.

But work stopped on November 1981 with only the outer shell of the building complete, when demand for semiconductor products fell off. "We started up again because of the rather dramatic increase in the integrated circuits sector and surging demand for our products," said an AT&T spokesman.

AT&T has been marketing 256 DRAM chips made at its factory in Pennsylvania for over a year, but a spokesman declined to say how many had been sold.

AT&T and other US firms making semiconductor products will have to step up production quickly to prevent the Japanese capturing the bulk of the mature market for 256K DRAMs, as they have already done for 64K RAMs.

Intel, for example, is still at the pre-production stage, and will probably start volume production of its CMOS version of the 64K RAM before introducing a 256K device.

Most 256K DRAMs are built in CMOS rather than NMOS versions, and several Japanese firms are starting volume production. Among the Japanese leaders are Fujitsu, the world's eighth largest chip maker, Hitachi and Mitsubishi.

Hitachi recently claimed that it was the first company to develop a one Mbit RAM, and said that the design would be shown at the International Solid State Circuits conference in San Francisco next month. Samples are still some way off.

Texas and Fujitsu team up

by Philip Hunter

SEMICONDUCTOR giants Texas Instruments (TI) and Fujitsu are teaming up on the production of gate arrays.

The alternate sourcing agreement will last for at least six years and covers Fujitsu's families of bipolar and CMOS gate arrays, with TI designing and producing compatible versions for worldwide marketing.

The two companies will also exchange software to make their computer-aided design tools compatible, offering their customers a common CAD interface for gate array design.

Fujitsu was beginning to have difficulties satisfying demand, according to product marketing engineer Steve Tomlinson.

"We were reaching the point where existing customers would stop using us because of that," he said.

Fujitsu has already sold gate arrays to many major OEMs, says Tomlinson, but the deal with TI will give the company access to smaller buyers of semi-custom devices.

The deal could later be extended to cover other gate array devices, according to Milton Kuser, a TI product manager, who took part in negotiating the deal.

A gate array is a piece of silicon containing a large number of unconnected logic gates. The customer uses CAD techniques to connect up the logic gates according to his own particular requirements.

Following the agreement, the CAD tools of the two companies will be effectively interchangeable. This means that customers will be able to supply the same detailed design of logic, timings and test operations to either company.

Toshiba's link with LSI Logic is the only other example of a second sourcing deal for gate arrays between a Japanese and a US company.

Graphics tablet beats mice

by Donald Kennett

READING-based Information Entry is ready to hit the big time with a new device that has been the undoing of others before it.

It has developed a graphics tablet that can be manufactured in large quantities at low cost, is simple and robust enough for industrial environments, compact enough to be portable and versatile enough to be better than a mouse for screen control, according to a company spokesman.

It is now looking for OEM customers who will integrate the device into their workstations in large numbers. In particular, it hopes to interest a large US company in marketing all its Multiped graphics tablet products in the US and elsewhere overseas.

Sales director Phil Harris said: "We finished the development three months ago and now we are starting to ship."

The tablet is made using thick film technology, which makes it simple and moisture-proof. It has a resolution of 1,024 by 1,024 points in an A4-sized pad and it can accept coded overlays to give it a large variety of easily-set-up applications.

SOFTWARE FILE

Japan enlists Ada in world leadership bid

ADA will play an important part in the Japanese plan to beat the world in computers, a British conference on the language has been told.

Mike Rogers, of the Common Market's Esprit programme, said at the third Ada UK conference at York University that Japan was making significant use of Ada in its fifth generation effort as well as of the more-publicised Prolog.

Ada would be available before the revised version of Prolog, he said, and it was already claiming that the language gave a 27% improvement in programmer productivity.

Rogers painted a gloomy picture of the changing strength of information technology in Europe and Japan.

"There is no lack of innovation in Europe, but we are very slow to bring ideas to market," he said. Europe's trade balance in IT was deteriorating rapidly while Japan's was improving. In 1975 Europe had a $1.7 billion lead, but by 1990 that would be turned into a $10 billion lag, at a conservative estimate.

He complained of an imbalance between the EEC's large subsidies for agriculture and the tiny investment in research and development among its 20,000 IT companies.

In the era of transistors Japan had been five years behind; but now in the 64K RAM era it had nosed ahead. The Japanese were getting their new products out in eight months. Europe took 15.

Among these new products was a major implementation of ADA by Japanese telecommunications giant NTT, which was also working on a version of Chill. But Japanese efforts had run into snags, he pointed out. He rejected the pessimistic conclusions of Ed Feigenbaum in a recent controversial book.

"He assumes they will meet all their objectives," said Rogers, "but they are only human. They'll meet some of those objectives, but not all."

Outlining the EEC's Ada schemes, he said they intended to launch the development of a full-scale Ada program support environment (APSE) and to back research into applications for manufacturing and telecommunications and into formal definitions. They were looking into setting up a European validation service similar to that of the US Department of Defence.

John Barnes, of systems house SPL, one of the language's pioneers who chaired the conference, was hopeful that the British government's MCHAPSE initiative would go ahead on a limited scale. The £9 million plan was hit by a funding dispute in the autumn, leading to the withdrawal of one of its sponsors, British Telecom.

Barnes did not foresee any further work on the Chill element of the project but said they were in the process of re-establishing funding for various significant parts of it.

"Over the months to come a lot of important work will be sorted out again," he said. One of the problems had been that they were not sure of the detailed objectives that needed to be met.

But he admitted that the original timescale had envisaged the project reaching completion by 1987.

He said 1983 had been the year in which Ada started to take off. This was shown by the ANSI standardisation in February, followed by the DoD validation exercise. The community had been surprised when the Data General/Rolm compiler became the first to be validated as not many knew this work was going on. Soon after that Western Digital's version had been validated.

It was apparent that commitment to Ada had grown with DoD backing. It had been a good year for compilers, if not for environments. The Telesoft, Data General and Intel compilers were being demonstrated at the conference, as well as York University's own.

He dismissed fears that the language would prove too complex. "We haven't found any training problems at all," he said.

Commander Trevor Syms spoke of a NATO software crisis which had been the focus of a meeting in Holland in December.

After listing the areas of weakness, he commented: "That doesn't leave an awful lot of space for success stories."

In November 1982 NATO had adopted Ada as its standard high-level language to be implemented by January 1985, "subject to satisfactory development in the marketplace".

He saw no way that NATO could impose a "chop" date after which all programs would use Ada. This meant some programs might have to use a mixture of languages and that Coral/Mascot would continue.

BARNES . . . "A lot of important work will be sorted out again".

DEC User Society is shaken up

DEC User Society (DECUS) has had a shake-up. A new business group intended to be hardware-independent and aimed at DP managers holds its first meeting on February 2. The commercial user group, has been converted into an RSTS special interest group, to convene on February 21 and the former Vax talkshop is renamed the VHS special interest group.

Training venture

A NEW Unix and artificial intelligence training venture has been set up by London software house Quantime, involving three ex-staff of the Span recruitment group. The company, called The Instruction Set, has Peter Griffiths as managing director and Mike Banahan as technical director. Banahan serves on committees of the Unix European User Group and American National Standards Institute.

Micro Focus buy

MICRO FOCUS, the UK Cobol specialist, has bought RDL, a subsidiary of Californian Unix developer Santa Cruz Operation. The deal involves Santa Cruz receiving Micro Focus shares and giving up its right to royalties on the C runtime system, which enables Micro Focus Cobol products to run in the Unix environment.

First earnings

ABOUT 7,750 authors will receive their first earnings through the public lending right next month, calculated by a Logica program. Loans by 16 sample libraries in the first half of 1983 were recorded and processed on a Perkin-Elmer 3210 mini at Stockton-on-Tees.

Package for GPs

US MINI-MAKER Digital Equipment has produced a software package for general practitioners, to run on its Professional 350 micro. Based on the Exeter Community Health Project, set up by the government in the early 1970s to examine the use of computers in patient care, it handles records, prescriptions and visiting schedules.

Banking house fights for survival

A BIG US banking software house, fighting for survival, has had to default on a $45 million credit agreement.

The company is Anacomp of Indiana, whose Continuous Integrated System (CIS) development has fallen way behind schedule and plunged the once prosperous operation into debt.

In the year to last June it lost $4 million on a turnover of $172 million, and in the first quarter of the present tax year it lost $12 million. At its zenith Anacomp had some 2,700 staff worldwide.

Delays in debugging the banking suite have frightened off potential customers – the client list has been static at 16 for months – and allowed rival Hogan Systems of Texas to edge in with a simpler solution which is already available.

Anacomp has spent four years wrestling with the programs and now has begun to lay off staff. It has also abandoned a joint venture with Cullinet for a slimmed-down version of CIS aimed at smaller banks.

This week chief administrative officer Christopher Duffy refused to speculate whether the company would come back into profit or when its licensees would get their system delivered. But he said: "Things are now looking very positive in negotiations with our bank and the project itself is coming together quickly."

A test site at Provident National Bank in Philadelphia had begun a limited service in December.

Chairman and founder Ronald Palamara has put in $1.25 million of his own money to try to stave off the threat of filing for bankruptcy.

The company says the main reason for its financial difficulties is that the piece of software turned out to be much bigger than anticipated.

Software File is compiled by George Black

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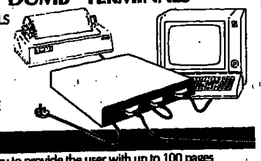

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COMPANY NEWS

More jobs flow to Scotland

IRVINE, the new town on the west coast of Scotland, is making a determined effort to get a slice of Scotland's growing high-technology industry.

SCI UK, a subsidiary of SCI Systems, of Alabama, has announced that it intends to set up an assembly plant there.

The project is expected to create 250 new jobs in Irvine by April 1985, and a further 300 could follow within three years. Colin King, chairman and chief executive officer of the company, said that eventually the factory could take on up to 2,000 people.

SCI Systems was founded in 1961 to supply military and aerospace electronics, and it is now making components for the computer industry. It is a quoted company in the US and in 1983 had pre-tax profits of $11.1 million on turnover of $182.5 million.

The company's initial investment in Irvine is worth about $5 million, but this will rise to nearer $12 million.

King said the new operation would serve SCI's customers throughout Europe. SCI has received development grants and selective financial assistance from both the Scottish Office, through Locate in Scotland, and the Irvine Development Corporation.

Irvine represents a foot in the EEC's door, and King intends to offer assembly facilities to other US companies wanting to manufacture inside the Community.

And this week Irvine Development Corporation announced the launch of another new company. Climax International will manufacture microcomputers in a 4,000 sq ft. facility provided by the corporation. Peter Irvine, of the corporation, said that Climax should offer 50 jobs within two years.

Climax micros will run the Pick operating system, and its Irvine operation will include a research and development centre. Climax is financed by both private and public investment, the details of which have not been revealed.

Climax and SCI will be providing sorely needed work in Irvine where, despite the development corporation's efforts unemployment is almost 25%.

Irvine is the youngest of the Scottish New Towns. It has special development status and can offer the maximum financial incentives – in the form of both grants and rent free accommodation – available to UK authorities. According to Peter Irvine, it is making every effort to attract new investment and high technology companies to an area already bounded by IBM in Greenock and DEC in Ayr.

The arrival of SCI and Climax give further evidence of the significance of the electronics sector to Scotland. The electronics industry is estimated to employ some 40,000 in 200 companies. About 40% are not Scottish.

JONES . . . Keeping a low profile and working a month's notice.

BIT of a disaster floors Berisford

WHEN S&W Berisford, one of the world's leading commodity traders, formed Berisford Information Technology out of its internal data processing department, it thought it was on to a good thing. There were strong precedents: National Westminster Bank and Unilever had done much the same with Centrefile and UCSL respectively.

But 18 months and an estimated £50 million later it has pulled the plug and, as reported briefly last week, BIT has ceased trading.

In an announcement of studied indifference, S&W Berisford revealed that after reviewing its progress, BIT had been withdrawn from external markets.

As one commentator had it: "The board of S&W Berisford takes no prisoners".

But BIT will not disappear without comment. It employed 60 people, some 40 of whom look set to lose their jobs – though the company would neither confirm nor deny this. It was set up with considerable ambition, and became a significant ICL Trader-point dealer, selling largely DRS systems. It also handled Epson's HX20 portable.

BIT was managed by David Jones. As a consultant with Nolan and Norton he had been commissioned by S&W Berisford to look at the possibility of co-ordinating its data processing and he ended up running the operation. Selling systems to other companies was afterthought.

As recently as last September Jones claimed that BIT was on target for £20 million turnover within five years, by which time internal group business would have fallen to less than 10%.

Jones is now keeping a low profile. He is understood to be winding down the external operations, discussing commitments to customers, while working a month's notice.

As far as ICL is concerned, it is not anxious to lose a Tradepoint dealer. There is speculation that BIT staff may try to continue the business, in which case ICL would be "quite prepared" to let this take part in Tradepoint.

Commodore cracks sales record

MICROCOMPUTER maker Commodore said that its unaudited financial results for the first half of fiscal 1984 showed that the company had achieved record sales.

Chairman of Commodore, Irving Gould, indicated that interim sales were up 125% at $630 million. Sales in the second quarter to December 31 rose 14% to $425 million. He added that profits for the periods "should be at record levels". Profits for the same quarter last year were around $25 million.

Gould predicted that Commodore's prospects for the third and fourth quarter should be better than any comparable periods in the company's history.

Optim goes to market

OPTIM, formed by Mike Burden from Monotype Communications in December 1982, is on course to join the Unlisted Securities Market late this spring.

Issuing broker will be Northcote & Co. which has brought four others to the USM, including cable TV company Greenwich Cable Communications.

$69m takeover

McDONNELL DOUGLAS, spurned by Tymshare, has acquired Computer Sharing Services of Denver, Colorado, for a cash payment of $69.2 million. A subsidiary of Rio Grande Industries, it will be operated as a subsidiary of McDonnell Douglas' MCAUTO division. It provides computer systems and systems and services (on five Honeywell mainframes) to telephone companies. In the nine months to September 30, it had an operating profit of $9 million on turnover of $26.9 million. In 1983 MCAUTO had revenues of $328 million, of which some $49 million came from telephone companies.

Bridge nets $9m

BRIDGE Communications of Cupertino, California, which builds Ethernet-based local network products, has raised $9.8 million in a third round of financing, including investment from Abingworth, the quoted UK venture capital company. The financing was managed by Morgan Stanley in New York. Bridge raised an initial $1.8 million in January 1982, and a further $4 million 12 months later. Bridge is represented in the UK by Sphinx, of Maidenhead, another Abingworth investment.

Over the counter

RIGBY Electronics, which makes microprocessor control systems in Manchester, hopes to raise £240,000 on the London over-the-counter market. Licensed OTC dealer Harvard Securities is placing 1.6 million shares at 15p each – around 40% of the equity. The company is forecasting profits of £85,000 in the year to June, and the placing will capitalise it at £540,000.

BT sale broker

HOARE GOVETT has won one of the City's most lucrative beauty contests. It has been appointed lead stockbroker to advise the government on the £4 billion sale of shares in British Telecom. De Zoete & Bevan and Scrimgeour KempGee are also retained to assist the Department of Trade and Industry and merchant bank to the sale, Kleinwort Benson. British Telecom has yet to name a broker to act for it during the sale, but it is believed to have appointed Cazenove. The Telecommunications Bill is expected to receive Royal Assent in September, allowing the sale of 51% of BT, the biggest privatisation of state assets undertaken by the government, to go ahead in October.

Coda in tune

CODA, a financial software house based in Leeds reports encouraging results. In the year to October 31 pre-tax profits almost tripled to £66,084, on turnover up 148% to £505,000. The company's major earner was an interactive accounting system, Coda-IAS, which runs on Hewlett-Packard HP3000 minis, and Coda's chairman Phillip Taylor said that it was preparing a version of the product to run on DEC Vax machines to be available in the current fiscal year.

Rodime up 463%

RODIME, Scotland's Winchester disc manufacturer, has reported pre-tax profits up 463% at £2.1 million on turnover ahead 350% at £7.2 million in the three months ended September 30. An audited full year statement will be available later this month. And things look set fair for Rodime in 1984. It has followed its first major order for its 3.5in drive, from Compaq, the Houston-based manufacturer of IBM PC-compatible portable micros, with a $50 million contract from Televideo.

Murdoch snub

JAMES MORGAN, president of Atari, the video game and home computer subsidiary of Warner Communications says the company will return a profit in 1984. But it is budgeting for a first half loss. Atari lost over $500 million in the first nine months of the year, but while Morgan would not be drawn on the fourth quarter performance he claimed the year-end result would indicate that the company had turned a corner. And he denied speculation that Warner was ready to ditch Atari, and he said that the attentions of Rupert Murdoch were unwelcome.

SHARES TABLE

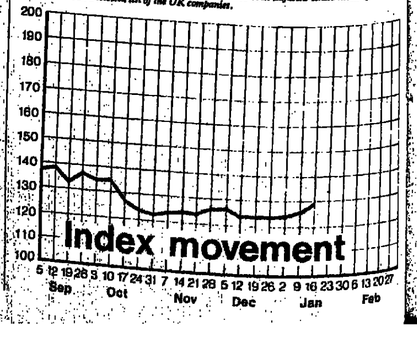
The shares table, which is specially compiled for Computer Weekly, by selected computer companies that reflect the state of the computer industry.

Previous published Index: 123.82 (18/1/84) — Index: 129.83 — Change +5.01

Pence 1984 High	Pence 1984 Low	London Stock Exchange Stock	Price*	Change*	£ 1983 High	£ 1983 Low	US Stock	$ Price	$ Change
314	300	Alumasworth (10p)	314	+10	3½	3	Amstrad	1¾	+¼
630	615	Ati Trans Prod (25p)	630	+15	7	6	Apollo Inc	20¼	+¾
450	442	Atlantic Comp (10p)	450	+15	5	4	Auto Data Pro	39¼	+¾
70	68	B Nor Fund (25p)	68		1¼	¾	Burroughs	34¼	+¼
160	159	Lloyds (25p)	160		2¼	1¾	Comp Assoc	7	
144	142	Cable Comm (5p)	142		2	1¼	Comp Sciences	45¼	+¼
450	415	CMG (10p)	450	+25	5¼	3¾	Computervision	13¾	
275	260	DPCE (5p)	275	+25	4¼	2¾	Condata	1¾	
295	293	Datastream (5p)	295	+5	4¼	4	Control Data	48	+¼
433	433	De La Rue (25p)	433		6¼	6¼	Cray Research	67¼	+¼
451	451	Fluid (25p)	451		6¼	6¼	Data General	44	+¼
687	633	Fortune (50p)	687	+40	9¾	8¾	Datapoint	29	
187	177	GEC (5p)	181	+10	2¾	2½	Digital Equip	78	+¾
92	81	ICL (25p)	92	+10	1¼	1	Dun Data Sys	24¼	+¼
450	450	Kalamazoo (10p)	450	+10	6¼	6¼	Gen Automation	33¼	+¼
267	245	Kode Int (25p)	267	+2	3¾	3½	Gould	35¼	+¼
298	290	Logica (10p)	298	+2	4¼	4	Harris	27½	+½
298	280	Memex (10p)	298		4¼	3¾	Hewlett Packard	43¾	+¼
188	180	Micro Focus (10p)	188		2¾	2½	Honeywell	132	+¼
493	477	Mitchell (10p)	493	+16	6¾	6¼	Intel	41¼	+¼
2728	2488	Nexos (10p)	2728	+240	37¾	34¼	IBM	131¾	
198	186	Office & Elec (25p)	198	+12	2¾	2½	Intn Ind	68¼	+¼
1551	1521½	Philips Lamp (F1 10)	1551		21¼	20¾	MDS (Mohawk D)	16¼	
232	232	Plessey (25p)	232		3¼	3¼	MSA (Mgmnt Sci)	64½	+¼
218	218	Quest Auto (10p)	218		3	3	Magnetic Peri	19¼	+¼
295	295	Quest Int (25p)	295		4	4	Modular	12¾	
660	640	Star Comp (10p)	660		9	8¾	Motorola	130½	+¾
290	290	Systems Des (10p)	290		4	4	National Semi	30¼	+¼
678	678	Telemetrix (5p)	678		9¼	9¼	NCR	80¼	+¼
137	137	Thorn EMI (25p)	137		1¾	1¾	Perkin Elmer	52¼	+¼
310	306	UCSL (50p)	310		4¼	4¼	Prime	18	+¼
		United Leasing (20p)	208		4	4	Racal	30¼	+¼
		Unlisted Securities					Recognition	20¼	+¼
135	127	Alarm (1p)	135		1¾	1¾	Segnal	35¼	
76	76	Bus Comp (10p)	76	+9	1	1	Shugart Comp	47¾	+¾
130	110	Cifer (10p)	130	+10	1¾	1¾	Storage Tech	14½	+¼
190	190	Comart (50p)	190	+30	2½	2½	Tandem	30¼	+¼
255	255	Comp Tech (10p)	255	+30	3¼	3¼	Tektronix	36¼	+¼
117	117	Dataplan (10p)	117	+2	1¾	1¾	Texas Inst	104½	+¼
23	23	Dawson Int (10p)	23	+2	¾	¾	Wang Lab B	35¼	+¼
70	70	Dem Sys Sys (10p)	70	+2	1	1	Wang Lab A	11	+¼
117	117	Dowty (10p)	117	+2	1¾	1¾	WWV		
89	89	Ferranti (50p)	89	+2	1¼	1¼			
87	87	Gen Scanning (25p)	87	+2	1¼	1¼			
312	312	Gresham Comp (R10p)	312	+12	4¾	4¾			
295	295	Micro Bus (10p)	295		4¼	4¼			
130	130	Micro Focus (10p)	130	+10	1¾	1¾			
250	250	Microgen (10p)	250	+30	3¾	3¾			
214	214	Mikro Sys (10p)	214	+6	3	3			
295	295	Minstrel (10p)	295	+6	4¼	4¼			
214	214	Nethy (£1)	214	+12	3	3			
295	295	Real Time (50p)	295	+6	4¼	4¼			
76	76	Rollis & Nichols (10p)	76	+10	1	1			
76	76	Sandata (10p)	76	+6	1	1			
72	72	Wilson Comp (10p)	72	-10	1	1			
122	118	Zygal Dyn (5p)	122	+7	1¾	1¾			

Pence Record Issues			Pence
70	75	Datasery (5p)	78
168	168	Parkson (10p) USM	168

The table shows the closing prices in London on Friday and in America on Wednesday and the changes from the previous trading table. Highs and Lows have been adjusted where necessary. The Share Index is based on a selected list of the UK companies.



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COMPANY NEWS

Sale surge revives mini giant

DATA GENERAL, which came back from the dead in 1983, continues to recover. It has reported a healthy increase in first quarter sales and profits.

In the 12 weeks to December 17 net profits increased almost threefold to $9 million on sales up 20% at $219.6 million.

Company president, Ed de Castro, said: "The improvement in orders and shipments is very encouraging." They represented an improvement in Data General's competitiveness, and a marginal recovery in worldwide capital spending.

The impetus for the increased sales is from the company's hardware divisions. About 35% of sales are outside the US.

De Castro said Data General had made a "very encouraging" start to its current quarter. He was optimistic about the company's prospects, but warned that sustaining growth would depend not only on customer orders, but on the availability of components, particularly semiconductors.

For the whole of fiscal 1983 Data General saw net profits fall 4% to $23.1 million, on sales up to 3% at $828.9 million.

The first quarter result represents earnings of 36 cents a share, against 14 cents in the corresponding period of 1983. Wall Street analysts are looking for between $2 and $2.50 per share in the year ending September 30, 1984.

■ *George Black* writes: Data General co-founder and vice-president Herb Richman, in London last week, had words of comfort for troubled rival mini-maker Digital Equipment.

He said he believed DEC was going through a bad patch such as Data General had experienced in 1981, but thought DEC would pull out of it before long.

"It will just take it a bit longer than it did for us, because a bigger company has greater inertia to overcome," he said.

Some would say that any tears shed by Data General managers are a crocodile's, since business lost to DEC is likely to be their gain. Others might reply that Richman ought to know, as his firm has been through its own financial slump and come out smiling.

The start of 1984 sees Data General about to launch its first big TV advertising campaign in this country, and switching its attention from office automation towards industrial sites.

Richman confirmed the findings of a recent International Data Corporation *Computer Weekly* survey that this year will see a boom in demand for computer equipment in the engineering sector.

This points to a prosperous period for both DEC and Data General, as engineering and research are traditionally committed to minis. Richman says factories are lagging a year or two behind offices.

But 1984 and 1985 will see them following the office trend with large capital expenditure programmes, he predicts.

He argues that Data General is well placed to take advantage of this expansion. Its bad patch was between 1980 and 1982 when operating income fell from $106 million to $35 million, as Data General restructured itself from serving OEMs to serving end users. It false-started into micros with the Enterprise, came in late to 32-bit superminis with the MV series, and re-entered the micro world only last summer.

The re-entry was well received by both technical and financial analysts, offering a choice of Data General proprietary and industry standard (MS-DOS) software.

DEC, meanwhile, is not yet out of the wood, according to some critics. Two legal disputes – one over a financial prediction by chairman Ken Olsen which US tipsters said was misleading, the other over alleged stock trading among managers – may have distracted it from its main business, and it has lost several bosses, including the UK manager Darryl Barbe.

In the autumn US market watchers were using phrases like "fumbling giant" and "out of touch" about DEC.

But Richman's statement last week shows he is far from underestimating the strength of the mini market leader.

RICHMAN . . . "DEC will pull out of it before long."

Robot researchers get £800,000 start

A BRITISH company has been formed with £800,000 venture capital backing to develop intelligent robot systems for industry.

Meta Machines is headed by Peter Davey, who currently leads the Science and Engineering Research Council's robotics programme, and Ed Hudson, previously manager of Unimation's European Systems Division.

Baronsmead Associates arranged the funding. Principal investors in the enterprise are Baronsmead itself, through the 1983/4 Baronsmead Expansion Scheme Fund, its own financial sponsor, Newmarket Venture Capital, and Oxford University.

Commenting on the investment, Davey said: "We started to look seriously for backing last June, and at times it has seemed like hard graft. But we eventually had two offers in December, and have gone for the package which looked somewhat more favourable to the directors, and which had a long-term commitment to the company."

Davey and Hudson have a controlling interest in the company. Meta Machines will employ 15 people by the end of the year and anticipates 100 after five years.

The company will develop sensor-based robot systems – robots with integral guidance systems incorporating cameras to help control and plan their movements, rather than operating to a fixed set of instructions.

Company News is compiled by Dave Madden

Mainframes lift MSA

MANAGEMENT Science America (MSA) preliminary unaudited financial results for 1983 indicate pre-tax profits up 38% at $19.5 million, on turnover up 44% at $145 million. MSA has suffered a substantially higher tax rate in 1983 and net profits will be up 17% at $10.5 million.

Chairman and chief executive officer John Imlay said he was pleased with the performance – "on balance". He said MSA's domestic mainframe product business had grown dramatically – up 42% at $64 million. Revenues from micro software were up 125% at $21 million.

According to Imlay, Peachtree Software is now one of the top 10 independent suppliers of software in the micro market.

But he admitted there was room for improvement: foreign revenues fell below target due partly to failure to penetrate some markets.

Micro maker calls receiver

H.H. MICROCOMPUTERS, one of the many Cambridge micro-makers, has failed, it was announced last week.

H.H. is part of Harrison Industrial Developments, an audio electronic manufacturer, and it was the group's bankers who called in the receiver.

Harrison made its move into the microcomputer market when H.H. was set up last May. At the moment it is not clear whether the company's performance in its first six months, or problems with the parent company, have brought about its downfall.

William Roberts, the receiver from accountants Ernst and Whinney, hopes to sell the business as a going concern, and said that there had already been approaches.

He would not say Harrison Industrial Developments owed its creditors, but indicated that the electronic and microcomputer units "might not necessarily be saleable together".

H.H. Microcomputers built and marketed the Tiger microcomputer, similar to models made by fellow Cambridge company Torch.

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PROFILE

Software boss who had to eat his words

ESKRA . . . "I got a taste for software."

by Philip Hunter

DAVID ESKRA does not pretend to be a prophet. Which is just as well for in 1967 he said: "Nobody in the world will buy this thing called software."

Now he is president of Pansophic, one of the big six contenders in the £250 million market for IBM CICS development aids.

Eskra joined Pansophic in 1979 and was asked to take over day-to-day running by Joseph Piscopo, the chairman, in May 1980.

"I first met Jo in 1965 while teaching Cobol programming. He was in my class," says Eskra. "He thought I was a pretty smart guy to not write a line of Cobol in my life until I taught it."

But it was Jo who was smart enough to form Pansophic in 1969. Eskra meanwhile was with RCA, at that time one of the seven dwarfs in the US computer market following "Snow White" IBM.

Eskra rose from technician to sales manager with RCA, before the company left the computer business in 1972. This put Eskra out of a job, but he took the chance to plot a change of course.

"I saw a tremendous opportunity in the computer services field," he says. He joined Cogna Systems, a subsidiary of Swift, and soared to the presidency before the company was sold off in the mid-1970s.

"While there I got a taste for software," Eskra admits. But the problem was that the company was under-capitalised, and ran out of ready cash. So when Eskra joined Pansophic, he at once set about preparing the firm for a public offering. This was made in August 1981 and raised $10 million.

Much of this money was spent paying off debts. Almost $7 million went on settling the bill for Easytrieve, the IBM database enquiry system acquired in 1979.

After his past experiences, Eskra likes to keep a steady head of liquid cash, and last July tapped the then bullish Wall Street market for another $30 million, bringing reserves to $40 million.

Like other US software houses that have recently raised millions on the stock market, such as MSA and Cullinet, Pansophic plans to snap up a few small software houses and distributors.

"There are four or five companies that we are pursuing," says Eskra. "We are looking at two database vendors."

Takeovers of big companies worth more than $15 million are effectively ruled out for Pansophic because of US tax laws, according to Eskra. In practice, Pansophic would have to use its shares to pay for the takeover, rather than cash. And Eskra would not want to do this because already many of the shares have been sold to the financial public, and any further release of shares would leave directors without a majority holding.

US tax laws specify that cash used for large takeovers above $15 million can only be written off against tax over a seven-year period, which is expensive because of depreciation.

Pansophic's market is now in what is called online IBM applications development under the CICS teleprocessing system. Cobol programming is replaced by an English-like language that generates Cobol code.

At least that is the theory. In practice much Cobol code still needs to be written, and many programmers still prefer to write it.

Pansophic and its main competitors, Cincom, Cullinet, ADR and Oxford Software, have been successful in reducing IBM's share of the CICS application market from 80% in 1979 to about 50% now. Pansophic has steadily increased its sales by 15% a year since 1979, reaching $43 million for the year ended April 30, 1983. Net profit was $5.7 million this year.

As IBM's share of the market continues to decline, a battle is on for dominance between the other companies in the field.

Eskra sees Cincom as the main competitor. Both Cincom and Pansophic are promising users a rich catalogue of new products for 1984. Pansophic relies mainly on its traditional mainframe business, and has just released Gener/OL, the latest CICS development tool, which the company claims can be used to develop all transactions and reduce further the need for Cobol and the other widely used high language in IBM environments, PL/I.

Cincom plans to introduce similar products in 1984, but is placing more emphasis than Pansophic on linking IBM Personal Computers to mainframes.

Not that Pansophic is ignoring the IBM-PC. "Our products like Gener/OL will all work on the PC," says Eskra. But the PC has limited capacities as yet, and users will want all the facilities of the mainframe version, he adds.

10 YEARS AGO

FROM COMPUTER WEEKLY OF JANUARY 17, 1974: Steve Jerritts was named as vice-president and managing director of Honeywell Information Systems. He was formerly general manager of Compagnie Honeywell Bull in France. . . . Kammerel Dohren AG of Hanover took a 40% holding in Business Computers Ltd. . . . The British Computer Society council took on its first student member, Richard Jennings, a systems analyst. . . . A joint venture between Telford Development Corporation and CDC Data Services aimed at providing worldwide computer facilities for firms in the Shropshire new town. . . . The three-day working week called by the Heath government caused payroll problems in the payment of unemployment benefit directly to the employee by his employer . . . Computerised water management was enjoying a boom.

PUZZLER

ROBERT.
F ×
KENNEDY

AN American correspondent sends this political alphametic produced apparently at the time of the Presidential elections in 1976.

All 10 digits are represented in the multiplication sum, but there is a "flaw" which spoils the artistic effect. The K is in fact the zero, so the actual problem is F × ROBERT = ENNEDY.

Nevertheless, an ingenious creation. See page 79 for solution.

DOWNTIME

Great train robber?

YET another unsuspecting user has been let down by a lack of understanding of the wonders of micros.

Neil Davids thought he was going to make a lot of money out of his new Commodore machine. He set it up at his home in Birmingham and got to work with the user manual. But it was the same old story: it just wouldn't do the job he'd bought it for.

Mind you, Davids was being pretty ambitious. You see, he thought he could use the machine to tap into British Rail's IBM mainframe network to find out all about the movements of freight trains to help with robberies.

And last week he was jailed for six years for stealing at least £55,000 from trains before he even got the computer system working.

There must be a message here somewhere about the advantages of manual systems over computerised ones.

Puns of every kind

UNCLE Sir Clive's latest marvel, the QL (Quantum Leap) has already been criticised. No one, it seems, likes the name. Was it chosen, I wonder, to enable the Sinclair marketing boys free rein with a load of dreadful puns?

The user group is dubbed the QLUB, and the operating system rejoices in the name of QDOS. The network enabling 64 QLs to talk to each other is called QLAN, no doubt after the Koulan, the well-known wild ass of the Kirghiz Steppe.

And no doubt there are more to come. Q Tips for cleaning the little devils perhaps?

Where to?

BEING a Prime Minister is fun. Not only can you send in the gunboats whenever you feel like it, but companies queue up to give you presents. Wang is one such company.

The folks at Wang in Glenrothes sent the leaderene a micro to play with. The inhabitants of No. 10 were unsure of what to do with the little beast and gave it to the CCTA. They are now mulling over who, in turn, to give it to.

Out of this world . . .

THERE are lots of exciting conferences about these days, and the problem facing the organisers of these events is to convince the punter that *their* conference is the one to attend. An interesting venue is obviously a help; more people are likely to want to go to Paris than, say, Biggleswade.

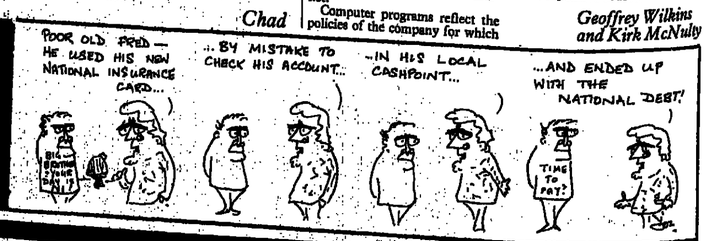
Online '84 is touting for business, and its location is rather unusual if the advance publicity is to be believed.

Among the many attractions of Berlin (for it is there) are "Scenical and urbicultural [sic], admirable and amazing sights."

The blurb goes on: "Berlin at night offers everybody something; pubs with a gay, great brandy shops with old Berlin buffets, pub galleries. A visitor-made setting program!"

Try getting all that in Biggleswade.

Chad



PLATFORM

Packaged or purpose built: how you choose

Geoffrey Wilkins is managing director of Wilkins Computer Systems. Kirk McNulty is senior management consultant.

ALL that comes in packages is not gold, nor is it dross. The current battle over the merits of packaged and bespoke software is obscuring the fact that they are not the only alternatives and are not mutually exclusive.

On one hand we hear this statement from prospective clients about five times each month. It causes us not a little concern.

The more prudent purchasers say: "We hope to find packages to do most of this." Their attitude is more realistic.

Both statements, however, raise a fundamental question which deserves careful consideration by any manager undertaking a computerisation project: "Should we use packaged software or shall we have it purpose-written?"

There are several good reasons for using packaged software. First, it's cheap; if not in absolute terms at least relative to the cost of having the same application purpose written. Secondly, it's available; it can be installed almost as soon as one decides to buy it. Thirdly, it's reliable; a package which has been successfully installed in two or three sites can be expected to be free from the subtle errors which are often found in the most carefully tested bespoke systems.

The advantage of purpose-written software is that it permits the management to specify its own policies, its own rules and its own practices

The advantages, then, of packaged software are: low cost, quick implementation and high reliability.

This appears to be an almost unbeatable combination and is attractive to a manager who is considering a new computer. The manager is well aware of his competition who face the same problems and he has to believe that in the 20 years since computers have been commonplace, someone has solved those problems before.

It is this sort of thinking that leads to the decision to use packages; a decision that is appropriate in many situations.

In other situations it is very wrong.

To understand the limitations of packaged software we have to start with the notion that each firm solves its business problems in a unique way. These unique solutions are the result of management perceptions of the market into which it sells and of the company and its abilities.

These solutions to business problems become "company policy". The policy can be written formally or simply be implicit, but it lays down the rules by which the staff perform their daily tasks. Beyond that, it gives each company its individual character and its competitive position in the market.

Computer programs reflect the policies of the company for which they were first written. From the point of view when one asks "Does this package fit?", one is really asking: "Do the policies implicit in this package match the policies of my business?"

It is a question worth asking because a computer will impose its rules on the company that installs it. If the rules fit, it will be a handy discipline for the staff. If the rules do not fit, there will be a great deal of time and money wasted trying to cope with the computer which is following some other company's policies.

The advantage of purpose-written software is that it permits the management to specify its own policies, its own rules and its own practices.

But the choice is rarely only "package or purpose-written". A well-designed software package will have been written bearing in mind the problems outlined above. They will contain facilities which make them relatively easy to modify. Thus, a good sales ledger can be extended to include product sales analysis and a good purchase ledger can be modified to provide project costing.

Some modifications, however, are always difficult. Modifying a single currency ledger to accept multiple currencies, for example, can be very cumbersome indeed.

The manager considering buying software should list the functions which he wants to computerise; list his policies which apply to those functions; and review the policies to identify those essential to the company's market position, and those that are simply "the way we do it".

The latter can be changed, the former may be, but not by a packaged computer program.

Having completed these steps he is in a position to review the packages available in consultation with the software house which will provide them.

The questions he should ask are: Does the package perform the functions I require, or can it be modified to do so? Does the package match my essential policies?

Where packages fit, one should use them because they provide all the advantages mentioned above. Where packages can be modified to fit, modify them and use them for the same reason. When the appropriate package is not available do not hesitate to commission purpose-written software which implements the policies of the firm.

In the long run it is by far the least expensive course.

Geoffrey Wilkins and Kirk McNulty

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, January 19, 1984

Surprise, surprise – QL looks a hit

IF nothing else, Sir Clive Sinclair can certainly keep a secret. Last week he launched his newest microcomputer, the QL, and there was genuine surprise among industry pundits. Even the cynics could be heard muttering that the QL looked very good for the price – £399 for a machine with a 32-bit processor.

Compare Sinclair's secrecy with the months of informed and largely accurate speculation which preceded IBM's announcement of its PC Junior, and which is again building up for the scheduled announcement on January 24 of Apple's Macintosh.

Sinclair no doubt feels he could afford to keep his product under wraps until the last moment because he really had something to surprise. In spite of the usual hyperbole which surrounds most product launches – QL stands for quantum leap – there is good reason to believe that Sinclair has once more put the cat amongst the pigeons.

Most micros on the market that are based on the Motorola 68000 32-bit family of chips carry a price tag of over £2,000. One reason for such a price is simply that suppliers believe the more powerful 68000 based systems should cost more than micros like the IBM-PC based on the Intel 8088 chip.

Sinclair's price for the QL could bring that calculation into question. If so, it could ensure that there really is a mass market for "professional" computers.

Suppliers of the higher priced 68000 based systems point out that the QL is not in the same class as their own products. It is to be sold through mail order, which begs the question of support and backup. It is a single rather than multi-user system, and has less memory and storage than the other 68000 systems on the market.

The launch of the ZX80 in 1980 had a dramatic effect on the market for small computers. If Sinclair can deliver what he promises – and there must be some question about his ability to meet demand – there could indeed be a quantum leap in the amount of computer power in the hands of the people.

Government is spot on

IT IS not often that any government can be accused of having an imaginative policy – except in a derogatory comment. And it is even rarer for anyone to have a good word for HM Treasury.

But with the announcement last week of a coherent policy for its own telecommunications, and the intention of backing it with intelligent purchasing to promote and even force the adoption of standards, it looks as though the two public bodies may be guilty of using their imagination for the better.

As to the claim that the policy will save money for the taxpayer – do you believe in Santa Claus? If it is true that any government has ever saved the taxpayer money, it is a well-kept secret. This claim must go down simply as one of those statements made from time to time by politicians and civil servants to boost their own morale and give themselves a sense of purpose.

Even if the sums do all add up and the policy succeeds, it is likely that as telecommunications become more useful and efficient an irresistible demand will be created by more and more bureaucrats to join the network, thus increasing expenditure.

But the government must be congratulated for tackling the problem of establishing standards through a relatively flexible scheme of financing pilot projects and public purchasing.

The question of standards is both tedious and complex. There is a plethora of standard-setting bodies, a multitude of temporary standards and a few real ones. Most of those that the industry does have owe their origins either to de facto setting of standards by large manufacturers or to systems originally developed for the US Department of Defence.

An intelligent application of its current policy could greatly aid UK suppliers in preparing equipment that can compete in the international marketplace.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Gary Priddis of Wilmslow, Cheshire, who wins £5.

The survival of the human race will soon be taken out of the hands of governments and given to computers.

Denis Healey in party political broadcast

LETTERS

Numbers weren't everything

THE article "Will we really be able to pull the plug?" by Roy Atherton (*Computer Weekly*, January 5) implies that at the time of Babbage, computing was concerned only with numerical quantities. If we consult Babbage's programmer, we see that this is not true.

The following quotation from Ada Augusta, Countess of Lovelace, in 1844 can be found in chapter 1 of Fundamental Algorithms (Volume 1 of The Art of Computer Programming, second edition 1977) by D. E. Knuth:

"Many persons who are not conversant with mathematical studies imagine that because the business of Babbage's Analytical Engine is to give its results in numerical notation, the nature of its processes must consequently be arithmetical and numerical, rather than algebraical and analytical.

"This is an error. The engine can arrange and combine its numerical quantities exactly as if they were letters or any other general symbols; and in fact it might bring out its results in algebraic notation, were provision made accordingly."

ELLIS N. THOMAS
Camberley
Surrey.

Developing Ada tools

IN RESPONSE to Patrick Hall's letter (*Computer Weekly*, January 5) on the removal of funding from the MChapse Project, I would like to take this opportunity to mention a Science and Engineering Research Council-funded project which began at Paisley in September 1983.

We are developing tools for Ada based on the York University compiler. Initially, work concentrated on the development of a system designed to conform as far as possible to the Stoneman requirements.

This consists of an enhanced interface to the Unix system to support use of qualified Ada identifiers as file names; arbitrary named attributes for files; and transparent version control at directory level.

The full Unix toolset is retained, and a set of PDE specific tools are provided to assist with version control.

In the long term, it is hoped the system will be able to support the Common Apse Interface Set (CAIS) currently being specified. However, the system will remain, as far as possible, language independent.

This work was presented to the Ada UK conference at York in early January.

DAVID MACKAY
Research Assistant
Paisley College of Technology

Quick release

IN Software File (*Computer Weekly*, January 5) George Black refers to the integration of various aspects of database technology in the US. It is a pity that he did not notice our press release in the autumn announcing our Anglo-Norwegian integrated database system, RD Quick.

This combines in a database application program generator management, report generation and word processing facilities for the Norsk Data superminis. It is planned to include graphical output within the same system during 1984.

TED BUTT
Halarose
Oxford.

Reality is a brand, not a genus

I SUPPOSE Hoover, Biro, Thermos and others must have had mixed feelings when their brand names started to drift into the language as generic terms. Now it's happening to us (Software File, *Computer Weekly*, January 5). UCL may well import minis with the Pick operating system – but they certainly are not Realities.

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BEN GARNER
Communications Manager
Microdata Information Systems Ltd
Hemel Hempstead
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The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

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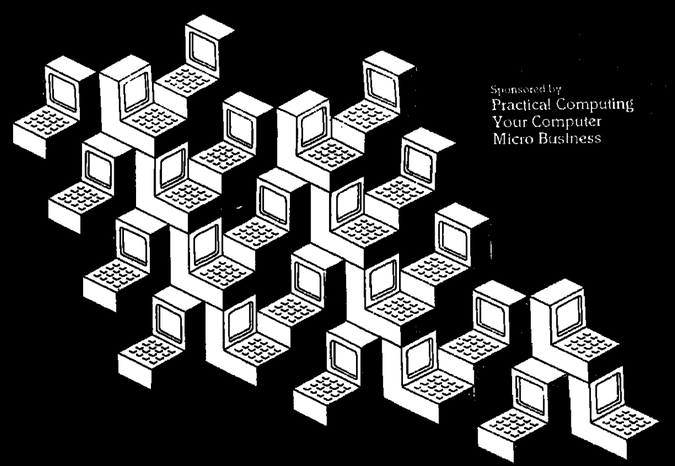

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■ NEC Electronics (UK) has promoted five of its sales engineers and taken on a further three. At the Southern office at Reading, Alan Shaw has been promoted to consumer sales manager from senior sales engineer, and Dave Austin, previously a product sales engineer is now a senior sales engineer. Don MacKenney joins NEC from RCA Picture Tube Division as sales engineer responsible for consumer sales. The Lutterworth office sees two new sales engineers: Steve Georgieff will be responsible for sales in the North Midlands Region and Kelvin Lacey for telecomms sales. Bill Morton has been promoted to telecomms sales manager from senior sales engineer. Two promotions at the company's head office are Terry Banks to distribution manager from senior sales engineer in the distribution department and Jim Lillie, a former product sales engineer, has become senior sales engineer.

■ Harris Corporation announces the election of Jon E. Cornell to senior vice-president in charge of the company's semiconductor sector. He was formerly vice-president, group executive, of the semiconductor products group having joined Harris in 1968.

■ Fu Chee Cheng, a representative of Magnum Corporation, has joined the board of Phicom as an executive director.

■ Prime Computer (UK) Limited has appointed Peter Kite as marketing manager for manufacturing and CAD/CAM. He joined Prime as a member of Compeda where he had been employed for three and a half years, predominantly as support manager for the plant design software, PDMS.

■ John Howe has been appointed divisional manager for Automated Controls and Systems (ACS), the newly-formed electronic product distribution subsidiary of Hy-Q Quartz Products. He was formerly marketing manager at Hy-Q.

■ Tech-Nel Data Products has appointed David Foley-Fisher (below) as UK sales manager, based at the company's head office at Banbury. Foley-Fisher joined Tech-Nel a year ago as a senior sales executive.

■ John Chatterton (above) has joined Harris Systems as general manager of its Digital Telephone Systems Division in Slough. He was formerly worldwide sales and marketing manager for ICL's Network Business Division, responsible for LAN and PABX sales.

■ Paul Wyman has been promoted from personnel manager to group general manager, personnel and training for Datasolve, one of the companies in the Information Technology Division of Thorn-EMI. He is also appointed to the Datasolve operational management board. Wyman is chairman of Personnel Managers Common Interest Group, Computing Services Association. He joined Datasolve in 1979, and previously was with BOC.

■ Charles Lamont has been appointed vice-president and general manager of Region 1 of the International Division of the computer systems operations of Sperry Corporation of New York. He was formerly director of customer and marketing support for the International Division, based at the company's UK headquarters in North London. In his new post he is responsible for all computer systems marketing and services in the Middle East, the Far East, Australia, South Africa and Latin America, operating out of Computer Systems' Worldwide headquarters at Blue Bell, near Philadelphia. A Scot, he joined Sperry in 1962.

■ Denis Moran has joined Rand Information Systems, the Kingston-upon-Thames based software house. He has been recruited from management consultancy in the City to head RISL's Financial Consultancy Unit, with responsibility for developing software products and services in insurance, electronic banking and office automation.

■ Alan Norman has joined the marketing communications department of Nixdorf Computer, from Myriad A V Sales, where he co-ordinated the marketing for the company's distribution of microcomputer systems throughout Europe.

■ Nick Hollis (above) has been appointed managing director of Computer Peripherals (Systems), the exclusive UK distributor for the Telex Corporation's range of IBM 3270 compatible terminals. Eric Lipscombe, former managing director of CPS, becomes executive chairman for Computer Peripherals, the holding company for Computer Peripherals (Systems), European Marketing Consultants, and Tridemace, a rentals company. Hollis joins CPS after 18 years with BASF. He helped to form BASF's computer division in the UK in the late 1960s and held various management positions until being appointed divisional manager, which happened in 1979.

Statistical machines pioneer dies

THE Bull Group has learned with regret of the death of Knut Andreas Knutsen, aged 95.

Knutsen, who took over the development and manufacture of the first statistical machines invented by his friend Frederik Rosing Bull when Bull died in 1925, was born in Oslo. He started his career in Norway, then moved to Switzerland and later to France, where in 1931, he was appointed chief engineer in charge of research and production with Compagnie Egli Bull.

In 1933, when, with the help of Knutsen, Compagnie Egli Bull was granted the right to use F. R. Bull's patents, the company changed its name to Compagnie Des Machines Bull. Knutsen was then named, from 1933 to 1964, director of patents and member of the board.

■ The death is also announced of Eric Wood, commercial director of Anixter (UK). He was 57.

■ *Responsible for helping to ensure that Micro Focus products continue to meet all the GSA requirements is Kevin Staines (left) who has been appointed quality assurance technical assistant. He is working on Level II Cobol compilers and code generators. Bringing experience in office automation to his new sales support role is Stephen Ashton (right) who has worked for NCR for 15 years. Staines and Ashton will be at Micro Focus' new 25,000 sq ft offices in Newbury.*

■ Chris Henderson has joined Rediffusion Computers as Northern dealer manager in the teleputer marketing group and will be based in Manchester. Previously he worked as a sales executive for 18 months at Hourds Computing and before that was with Asct as a sales executive for two years.

■ Data General has appointed Roger Green as senior sales executive with responsibility for Grampian, Tayside and the Highlands and Islands, a new position within the company. Prior to joining Data General, he was with Mohawk Data Systems, responsible for the Scottish sales area, and General Electric of America which he joined in 1967.

■ Addie Berman (below) has been appointed sales and marketing manager of Euroco Computer Services. Previously with McCormack and Dodge, he introduced financial application software to the corporation's major European markets.

■ Sphinx, the software marketing company specialising in Unix related products, has appointed Joe Molloy (above) to lead its Network Products Division. He will be working with Andy Hall, technical support specialist, and Ian Back, who will spearhead the salesforce. Molloy joins Sphinx from T-Bar International (Europe) where he was European sales manager for products ranging from IBM-compatible channel switching to data communication network control equipment.

■ A product manager has been appointed for Cartwright Brice's Computer Supplies Division. Walter Freeman was previously buyer for National Computer Supplies. He is also a former sales manager for Wespac.

■ Dupont Computer Services has appointed a financial modelling specialist to market Finplan direct to large customers and to establish a dealer network throughout the UK. Peter Judson has joined the company from Comshare where he was Midlands systems implementation manager.

Good news for roving reporters, international traders, travelling sales managers, and every company that seeks a versatile, portable printer for their computer! The Decwriter Correspondent (LA 12) is a desktop printer built to interface with most systems in the world. In fact with its acoustic coupler you can plug into most systems in any part of the world over the telephone lines.

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COMPANY PROFILE

Since 1980, when profits were slumping and the rate of revenue growth slipping, Burroughs Corporation has begun to live again.

The change has been so dramatic that employees speak of the "new" and "old" Burroughs, almost as though they were separate companies.

This revitalisation has happened since the appointment of Michael Blumenthal as chairman. His policy has been to prune away all of the company's weaker branches while nurturing the stronger, healthier arms.

He capitalised where the company was strong – in areas like CPU development and manufacture – but wrote off $125 million worth of obsolete products, and didn't hesitate to buy in better people and technology from outside the company when he thought it was necessary to do so.

John Riley examines the changes that Blumenthal has initiated, in service, support and in market direction, and then takes a detailed look at the company's future throughout the rest of the '80s

Burroughs climbs out of the doldrums and breathes again

MICHAEL BLUMENTHAL, Secretary to the Treasury under the Carter administration, likes to joke that the recession in the US first began when he left the government.

Whatever the connection might have been, his appointment in September 1980 as chairman of Burroughs Corporation certainly signalled a revival of the company's fortunes.

Burroughs Corporation was founded in 1886 by William Burroughs in St Louis, Missouri, to make adding machines. A long-time IBM rival, it moved into the nascent computer industry, adding computers to its traditional business equipment products.

By 1979 its overall financial performance was second only to that of IBM – but was a large order of magnitude lower.

Throughout the 1970s, Burroughs enjoyed a 15% annual growth in revenue and a 20% growth in profit. The company's main strength was generally recognised by customers and competitors alike as being in its technically advanced medium and large computers, and it had a significant user base, particularly in the financial community.

But during the second half of the 1970s the clouds started to gather and there were clear signs that the company was losing its direction. It was not responding effectively to the demands in the market place brought about by rapidly changing technology and the fast-expanding customer base.

The most persistent and potentially damaging criticism, which gained strength from 1976 onwards, was the company's reputation for poor systems and engineering support.

There was also a wide range of other consistent criticisms, including an inward-looking management, inadequate testing of products and poor peripheral performance.

The company has become primarily market-driven

The catalyst that jolted the company into re-assessing its strategy – and appointing Blumenthal as chairman and chief executive in 1980 – was the slump in profits and in the rate of revenue growth.

In 1980, the revenue of $2,902 million was only 2.5% up on the previous year, compared with the earlier 15% annual growth. At the same time, profits dropped from $306 million in 1979 to $82 million in 1980.

Blumenthal capitalised on areas where Burroughs was strong, particularly CPU development and manufacture, but vigorously pruned those in which it was weak. For example, by December 1980, he had written off $125 million worth of obsolete products.

He has maintained that ability to cut his losses: as recently as April last year, Burroughs dropped plans to produce a laser storage system after five years and $20 million worth of development.

The idea that Burroughs should try to cover all computer-related areas on its own was also scotched, and Blumenthal has bought in both people and technology when he considered they were superior to what he could find within the company.

Aided by an early retirement programme, which he introduced, Blumenthal filled 20 of the top 25 company positions with people from outside the company during his first 18 months. His choice of staff reflected his emphasis on the importance of strategic planning, quality control and systems and engineering support.

The "new" Burroughs (as it is referred to within the company) is acutely conscious of its poor reputation for support in the 1970s. "We shall set our goals to achieve total customer satisfaction, and to deliver error-free, competitive products on time, with service second to none," was Blumenthal's statement of quality policy.

That policy has crystallised into organisations aimed at breaking through potential bottlenecks in customer support, such as resource control centres and technical resource centres.

BLUMENTHAL . . . Has maintained his ability to cut his losses.

"Blumenthal has been a corporate tonic," says John Davidson, Burroughs' UK general manager of marketing, who remembers the "old" Burroughs with its "long line of home-grown and perhaps too introverted corporate management".

Although Burroughs employees now contrast the "old" and "new" Burroughs, they are aware that many of the elements of the "new" were present in the "old". Blumenthal highlighted and developed them.

An example of this is that just before Blumenthal took up his position in 1980, Burroughs took over the software company Systems Development Corporation, which subsequently designed an electronic filing cabinet called Records Manager.

Blumenthal has followed up that approach of buying in technology where he has identified weaknesses in Burroughs' product line.

In December 1981 he took over an ailing Memorex to boost Burroughs' peripherals and disc drives capacity. Important fruits of that takeover were launched this time last year in the large capacity disc drives to go with the six mips B7900 top of range mainframe.

"The reputation of Burroughs for having innovative processor designs was unfortunately coupled with our rather lack-lustre peripheral performance," Davidson reflected.

"Overnight, the synergy with Memorex gave us the volume production to survive in the '80s, with state-of-the-art peripheral products.

"We no longer try to do everything ourselves and we are prepared to make strategic acquisitions where they fit a long-term strategy," he added.

Blumenthal has also made deals with third party companies to take advantage of their technology. In October 1981, Burroughs signed an OEM deal with the Californian company, Convergent Technologies, and gained 85% of Convergent's output of 16-bit microcomputers – its B20 range – together with a seat on its board and manufacturing rights.

More recently, in August 1983, Burroughs announced a £21 million deal with the Scottish-based banking and financial computer terminal manufacturer, Fortronic.

Linc has become a cornerstone in Burrough's systems offerings

Linc, which Burroughs claim reduces systems development time by 90%, was developed by two independent New Zealanders, and Burroughs' New Zealand subsidiary started marketing it there in 1978.

In the early 1980s, there were signs that non-Antipodean Burroughs users were becoming impatient waiting for an applications generator from Burroughs. But during that time Linc was being extensively evaluated so that since 1982 it has become a cornerstone in Burroughs' systems offerings.

Under the "new" Burroughs there have been moves to formalise procedures to make it easier for software houses to produce applications software. For example, in the UK in November 1982, Burroughs set up its Application Program Exchange (Apex) scheme whereby the company markets packages produced by third parties for agreed royalties.

There are currently about 30-40 software houses writing applications packages for Burroughs in the UK, in addition to its own

■ Continued on page 24

Burroughs' 98-year history has ranged from winning the Queens' Award to Industry in 1967 (above) to the profits slump of 1980.

Burroughs once boasted that it was the UK's oldest computer company. It still is, but now the company emphasises other qualities. The fourth of Computer Weekly's company profiles puts the spotlight on Burroughs. NCR will be the subject of our next profile on February 6.

COMPANY PROFILE

Burroughs no longer promotes itself as a computer manufacturer shifting boxes of electronics but pushes the image of a gigantic systems house. And most of its systems use applications software from other suppliers.

It is also setting up computer business centres and selling machines through third parties in an effort to muscle in on markets dominated by big minicomputer and micro manufacturers.

John Kavanagh examines these trends and takes a detailed look at the third-party software packages

How third parties fill software holes

IN 1982 Burroughs' US headquarters recruited a doctor into a top marketing job. Chairman Michael Blumenthal lists this as one of the significant events of the year in his last annual report, because it highlights Burroughs' move into selling packaged systems to specialist industries.

Movement towards sharply-defined markets and selling through third parties are part of what the company calls the new Burroughs. Blumenthal gave the company an urgently-needed shake-up when he arrived in 1981 but behind the scenes Jerry Jacobson, head of strategic planning, was looking outside the company for new ways of acquiring and selling products. As UK general marketing manager Iain Davidson puts it: "We no longer try to do everything ourselves."

Davidson says the UK subsidiary has adopted the new Burroughs philosphy more enthusiastically than any other. As far as selling its computers directly to users is concerned, it is concentrating on six markets, or lines of business: manufacturing, distribution and wholesale, finance and insurance, the construction industry, the legal profession and government and public services.

"There's not a single UK salesman without a line-of-business job title," says UK line-of-business marketing manager Tony Holden. "It's been a painful move: we've had to tell successful hardware salesmen to put aside what they know and extend their range and take on extra staff with no computing or sales experience.

"Now the focus is switching from dealing with the data processing manager, who is looking for a technical solution, to the financial director, the production manager and so on.

DAVIDSON . . . "We no longer try to do everything ourselves."

"Users are demanding user solutions. We need to understand the customer's business and advise on business solutions rather than computing solutions."

Existing staff have been retrained and specialists in the target markets have been taken on. A recent Burroughs job advertisement called for eight years' experience in distribution and added that computing and sales experience were not essential. "We're asking specialists to come and help us recognise opportunities," says Holden.

Burroughs points out that as hardware margins continue to be eroded, growth must come increasingly from such services.

In the shorter term, Holden says the new systems approach has cut the cost of making each sale, because sales and development resources are concentrated on markets which the company knows give it a good return, rather than scattered over all possible markets. For example Burroughs now puts little effort into the retail market, where it has no traditional strengths.

In 1982, Burroughs had only a handful of software packages for its target areas. But in the last year, the product range has filled out considerably and there are now packages for most of the markets available on most Burroughs processors.

Holden says the shortfall has been made up by internal use of the company's Linc program generator, plus the introduction of the Apex (application program exchange) scheme. This involves Burroughs selling packages from software firms.

In some cases, Burroughs takes full responsibility for the package, training its own staff and supporting users. With more complex products the software suppliers do the customer training. In all cases the user signs a sales contract with the software firm.

"We have opened up our plans to software houses, shown them where we have gaps and targets and invited them to fill those gaps."

Holden insists there is no competition between Burroughs' products and third party suppliers' products. "We have opened up our plans to software houses, shown them where we have gaps and targets and then invited them to fill those gaps," he says.

As a result, over half Burroughs' packages come from Apex members. Companies taking part in the scheme include the production control (and ICL) specialist, Safe Computing. The company supplies its Microsafes package for the B20 microcomputer which Burroughs buys from Convergent Technologies.

Burroughs took on 25 firms in 1983 and expects to have 70 or 80 in the UK by the end of this year. It aims to do between 25% and 30% of its entire UK business through these firms in four years' time.

To put that in perspective, ICL expects 15% of its business to come from third parties by 1985, while minicomputer giant Digital Equipment, which has always been in this market, gets 45% of its income in this way.

Meanwhile, Burroughs is setting up its own computer business centres. They, too, will cover microcomputer and minicomputer sales and support small users. Seven centres will be set up in the UK this year.

"In the 70s we had 40 UK branches, but such a big operation is no longer economic," said Graham Margetson, head of the business centres and the independent sales organisation (ISO) scheme.

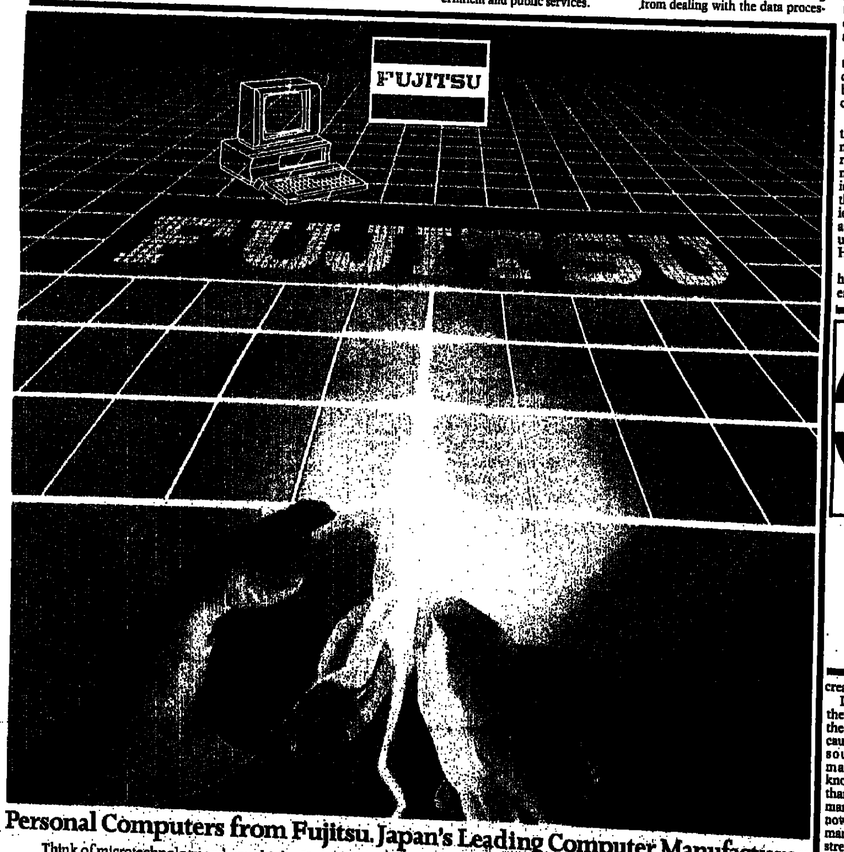
Margetson is certain that Burroughs can avoid clashes between the third parties and its own sales people, a problem Digital Equipment struggled with during most of 1982 and 1983.

Half the ISOs are selling other companies' equipment as well as Burroughs', but Margetson says there are no clashes here, either: the Burroughs products fit into gaps in their ranges.

The other half are already Burroughs software firms – and these companies welcome the scheme.

"Previously, we were mainly introduced to customers by Burroughs," says Alan Sparks, managing director of QRH Computer Group, one of the biggest Burroughs software houses. "This gives us independence. We can find our own business without having Burroughs tell us what we can and can't work on.

"We haven't always agreed on the best way of developing an account – and Burroughs was the senior partner. Now we can control that account and provide everything: equipment, software, training and so on."



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COMPANY PROFILE

System compatibility is the order of the day as the new Burroughs prepares to rationalise its product line for the 80s. "We are in the business of selling solutions to problems rather than machines," claims manager of product marketing, Bob Walker, "and that doesn't mean tieing customers to one product line."

The company's computers are segregated into four distinct groups, starting with the B20 microcomputer and rising in power to the latest B7900 multi-processor. Recent enhancements to the top end of the range and entry level mainframes are designed to allow greater flexibility for users to upgrade without having to abandon existing systems using compatible operating systems and communications protocols.

This extends to having a CMS (computer management system) cross-over version of the B900 office system at the top of its segment, enabling users to upgrade to an entry level B1900 small business system without rewriting software immediately, or changing peripherals. Keith Holder investigates

Solutions to problems is product aim

BURROUGHS is taking an IBM-style approach to some segments of its product line, and plans "strategic purchases" of companies and equipment, particularly for the microcomputer and peripherals sectors. The first example of this is the purchase of Memorex.

This plugged the gap in Burroughs' disc storage devices, seen by industry observers as a weakness, without costly development programmes.

Brian Walker, product manager, peripherals, said the Memorex kit would be used mainly with large-scale systems.

Starting at the micro end, there is the B20. The machine is built around the 8086 processor and is designed to operate as either a standalone unit or part of a distributed system. In the latter case, it has advantages over systems using a central processor attached to dumb terminals because each operator has access to processing power which can be used independently according to Trevor Westoby, product manager for this line.

In such a system, one B20 would act as a host for peripherals. It uses the Burroughs BTOS operating system, but plans are already at an advanced stage to offer CP/M and MS-DOS as well. Westoby said that BTOS has been designed to offer specific advantages to users, allowing different configurations, such as filing systems and communications, to be set up as keystroke options.

Basic, Cobol, Fortran and Pascal will all run on the machine and the company's X-25 interface allows networking. Linking with IBM and Burroughs mainframe computers, with the ability to download data and programs, is possible. Memory starts at 0.5 KByte and is expandable to 512 KBytes using an auxilliary hard disc subsystem.

Westoby maintains that a lot of planning went into making the machine easy to use, not just with applications packages but also for setting up routines. Prices for standalone units start around £3,000. For distributed systems the cost per workstation is around £3,500, allowing for three MBytes of spooled memory.

It is not until the next step up, to the small business systems range covered by the B95, 96 and 930, that the option to progress upward in a structured way begins to emerge.

At entry level, the B95 uses the NBDS processor common to all other products which uses the computer management system (CMS) operating system/applications software package, through the master control program (MCP) operating systems, which allows high-level languages to be used for portability of applications programs.

It will support from two to six terminals and comprises three modules housing the processor, data communications lines, disc subsystems and power supply. Up to five communications lines are provided, which include options for A1M devices, distributed control and SNA interfaces.

Main memory is 64 Kbit RAM, expandable to 512 KBytes, with up to 25.4 Mbytes from two disc subsystems. Two system printers can be supported, ranging from a daisy wheel model to a wide line printer, with a speed up to 500 lines per minute.

The MCP system provides two-way communication with the system available in most local languages. One of the main benefits claimed for this system is the ability to execute multiple programs simultaneously and run programs larger than the available memory size using a virtual memory system.

It also maintains an inventory of system resources. Using CMS, automatic execution of pre-defined sequences of commands and repetitive programs is said to be possible.

The next step up is the B96, which as the B95's big brother, expands the number of terminals supported to 20 together with increases in memory and printer options. Three versions are available which again use MCP and CMS.

The 96-20 supports one disc storage subsystem, while the 96-40 and 9680 support two. These are all fixed discs with capacities from 4.6 to 77.2 MBytes. In addition, the B9498 high-speed tape drive can be used for data file back-up or applications processing.

Although the system is still limited to two printers, the range now includes letter quality, text and 650 line per minute line printers.

The B930, at the top of the range offers the same package but uses up to eight high-speed (three MHz) processors, Burroughs claims that apart from increasing system flexibility, this allows processor redundancy, and hence a high degree of system reliability.

It is capable of supporting 32 communications channels, over 1,700 MBytes of fixed disc storage and 520 MBytes of removable disc rack. It also features the CP9580 communications extension and can be used as a network device. In this manner, up to 400 terminals have been run on one customer installation.

With the whole of this series, the benefit most stressed by the company is the ability to run CMS. This is an integrated system of operating and application software which allows users a logical upgrade path to the next level of machines, the B1000 range.

Programs can be run in either CMS or native B1000 mode concurrently, so that once a user has decided to upgrade, he can continue running old programs until they have all been converted from CMS.

Product manager, networking, David Hunt said that this feature was intended to provide an initial changeover option and CMS lacked the sophistication of higher operating systems used on larger mainframes. It does provide online programming facilities for Cobol, MPL-11, NDL and RPG 11, through the command and edit language (Cande) and RPG-Edit.

The B1000 series not only shares CMS commonality with the smaller systems but is also the first level at which the logic and information network compiler (Linc) applications development system is available. This spans the rest of Burroughs' processors, including the B7900, and provides a complete DMS-11 relational database design with report and enquiry facilities.

The range is based on what Burroughs describe as fourth generation processor design. All run under the master control programme/translation control system MCP/TCS-IV which consists of MCP-11, Sort, Utilities, network definition language (NDL), a data management system DMS-11, online data entry and Cande.

Last year saw some enhancements to the software for the system, but these only apply to the latest versions of the B1800 and 1900.

The B1955 has the option of the CM 1900 TCS operating system for better communications handling. All versions support Cobol '75, Fortran '77 RPG and interactive basic compilers, and conversion aids for emulation, translation and interpreting. Program compatibility is maintained throughout the range.

HUNT . . . "The computer management system lacks the sophistication of higher operating systems."

It is not until the small business systems range that the option to progress upward in a structured way begins to emerge

WALKER . . . "Memorex will be used mainly with large-scale systems."

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COMPANY PROFILE

"Nothing will be released on to the market until we are sure that it is right. In the past things were released too early." This assurance from Burroughs' UK managing director, Bob King, sums up the new approach to quality control within the organisation. All equipment is now examined before delivery at "hot stage centres" where customers' configurations are tested for up to two weeks, then delivered to the user part-assembled. Coupled with this rigorous approach to new equipment, Burroughs has also reorganised its maintenance and back-up service.

John Charlton reports here on the improved relationships between Burroughs and its customers in this country, where at one time the US manufacturer was believed to be due to face 150 outstanding lawsuits brought by dissatisfied users.

Since then it has tightened things considerably, and much credit for that is due to King, whose view of the computer industry was formed when he himself was a computer user, as recently as 1982.

Ex-user King cheers up his disgruntled customers

WHEN Bob King quit his post as chief executive at Scottish and Newcastle Breweries to become, in September 1982, Burrough's UK managing director, he admitted that his knowledge of the computer industry was small: "I only know about computers from the point of view of the user – that is, what users want."

Above all, what most users want, and this goes for any computer manufacturer's clients, are reliable products that live up to expectations, and prompt back-up and maintenance services from the manufacturer. There was a time when Burroughs did not always meet these basic requirements.

In September 1982, ARI Propaflor put in a claim against Burroughs for damages in excess of £125,000 over the poor performance of a B700 computer and associated software. At that time over 150 UK firms were believed to have lawsuits outstanding against Burroughs.

Since then, Burroughs has tightened up its quality control operation considerably. As King put it: "Nothing will be released on to the market until we are sure that it is right. In the past, things were released too early. A date was set and the product came out whether it was ready or not."

This approach does not just apply to new products. Now all Burroughs equipment is thoroughly tested before it is delivered to the user.

So called "Hot Stage Centres" have been set up by Burroughs where all new equipment is tested before delivery. Usually, customers' configurations are tested for up to two weeks, and are then delivered to the user part assembled.

Apart from increasing the likelihood of preventing faulty equipment being delivered to the user, the Hot Stage testing procedures are designed to cut the time it takes for users to get systems up and running once they have been delivered.

Hand in hand with this rigorous approach to new equipment, Burroughs, has also reorganised its maintenance and back-up service.

Peter Elcome, Burroughs' general manager for customer service engineering, says: "During my 26 years with the company, Burroughs has not always enjoyed the best reputation for service, but that has all changed since 1982 when we implemented a new service structure and philosophy. Now our service is second to none."

At the heart of the Burroughs' new style back-up organisation are four resource control centres which are situated in Bristol, Stockport, Finchley and Leicester. All of the company's customers – and there are over 15,000 individual users in the UK – have computerised service records at the centres, and there are online links to all Burroughs branch offices.

The centres aim to provide, in Elcome's words, "service from a single phone call". Most equipment and system problems can be dealt with over the telephone, but should a customer service engineer be required, Burroughs expects to have one on site within four hours. According to Elcome this target is now being met in almost 80% of all cases.

Thanks to the computerised recording of user calls for help, any persistent problem is identified by the centres. Should the same fault occur three times, both branch and centre management are advised, and the problem is discussed with the relevant engineer. In such cases a specialist may be sent to the site concerned, or the suspect unit replaced altogether.

Commenting on the new centres John Goodfellow, the chairman of the UK branch of ABCU (the Association of Burroughs Computer Users) said: "They are working well, both as a concept and as an actuality. But we would like to see more drawing together of the statistics from all four sites."

Another integral part of Burrough's improved relationship with its user base is the new education centre which is being set up at Milton Keynes.

This is due to open in the spring of this year, and Burroughs claims that it will be "Britain's first purpose-built residential computer training establishment". Certainly, the centre will feature some impressive facilities which include over £2 million worth of computer equipment, 34 classrooms, 18 computer laboratories, and 250 study bedrooms.

Recreational needs are catered for by an indoor swimming pool, tennis courts and two squash courts.

Burroughs has a rather rubbery approach to prices. One ABCU member paid the company £8,000 for a Winchester disc drive, while another paid £2,500. And there is a great range of prices in between

Bob King says there were two motives for the creation of the Milton Keynes centre: the need for users of Burroughs systems to be fully trained in their effective application; and the need for quality and excellence in every aspect of Burroughs service to its customers.

There was also some demand from Burroughs' users for an improvement in the education and training facilities provided by the company.

Peter Loveder, who is Burroughs' ABCU liaison manager, says: "Many users really wanted an education centre to be set up. In the past, they have been very vociferous about poor educational facilities."

The fact that Loveder's position exists at all is an indication of Burroughs' drive to improve its image and relationships with its users.

Before the management shake-out which followed the appointment of Michael Blumenthal as chairman of Burroughs, there was no such job as user liaison manager.

Loveder's only assignment, the job of the liaison manager, is to act as a two-way communication channel between the company and its users, who are represented through ABCU and its sub groups.

ABCU came into being in 1966 and covers users who have bought equipment from the European and African division of Burroughs. Similar user groups exist in the US, Australia and South Africa, and ABCU maintains close links with these counterparts.

Currently, ABCU can boast over 1,000 members. The UK, which has about 650 members, provides the largest national contingent. Although ABCU has members in 23 countries, only one or two hail from Africa. But membership does include users based on the Eastern side of the Iron Curtain.

Whenever a company purchases Burroughs equipment it is informed about the existence of ABCU and invited to join. The cost of membership depends upon the size and power of the hardware bought by the user. Large system users pay £115 per year, medium system users are charged £65, and the membership fee diminishes to £30 for users of the B20 microcomputer, or Burroughs' office automation system, OPIS.

Once a user joins ABCU, he is entitled to attend meetings of sub groups, national and common interest groups, and the two major ABCU conferences which are held biannually. There are also local ABCU groups in many parts of the UK which meet two or three times a year.

ABCU is financially independent of Burroughs, and is very proud of the fact. It has its own secretariat which keeps members informed of developments via a monthly newsletter. The secretariat also reports to ABCU's executive committee which meets twice a month.

Overall, control of ABCU lies in the hands of the policy committee which meets twice a year at the two major association conferences. The policy committee comprises representatives from nine national ABCU groups, three from the common interest groups – large, medium and B1000 systems – and representatives from the executive committee.

The executive committee consists of six members elected by the general ABCU membership, and a chairman and past chairman.

Not all meetings are restricted to members. According to Goodfellow: "We do have open sessions, and if non-members turn up, we would not turn them away." Burroughs' users who may feel unsure about the value of joining ABCU might find it worth their while to attend an open meeting at an ABCU gathering.

The tangible benefits of ABCU membership are few. Members get discounts on a number of supplies such as paper, ribbons, and disc packs. The real advantage that ABCU members have is that of belonging to a pressure group which can raise matters of concern.

Most of the user groups find out what issues are worrying members by two methods; hearing opinions at meetings and sending out questionnaires to members.

David Whitworth, secretary of ABCU's large systems group until last November, says: "Every six months we have a ballot on suggestions that have been submitted by members. The five suggestions that come top in the poll are then acted upon by Burroughs."

According to Loveder, there have been "fewer and fewer contentious issues in the last couple of years, and I can't think of one that really stands out". A year or so ago, the users were very interested in having more statistics made available on product reliability and downtime. The implementation of the resource control centres has allowed these statistics to be more accurately collated.

In Goodfellow's experience, there were two hardy perennial complaints at ABCU conferences: the quality of engineering support, and the problem of software up-

LOVEDER . . . "Many users really wanted an education centre set up."

ELCOME . . . "Service from a single phone call" aim.

date-notification and releases. "We still get rumbles on these issues," he said.

As for the thorny question of software update information releases, Loveder comments: "We have set up a special logistic group, with its own database, to handle the distribution of software and the associated manuals and update information."

One user group secretary, who prefers not to be named, was none too happy about certain aspects of Burroughs pricing policies. He said: "One complaint I have is that Burroughs has a rather rubbery approach to prices. One ABCU member paid the company £8,000 for a Winchester disc drive, whilst another paid £2,500. And there is a great range of prices in between. There is a definite lack of management control at the lower level."

Some of these issues will undoubtedly be aired at the next full conference of ABCU which is being held at Stratford-upon-Avon in May.

That the Burroughs' representatives who attend the conference should be willing to listen and act upon users' problems is confirmed by the words of Whitworth and Goodfellow. The former says: "We don't dwell on the past. Burroughs is now much more receptive to issues of concern, and it has set up well developed lines of communication."

John Charlton is a reporter with Computer Talk.

COMPANY PROFILE

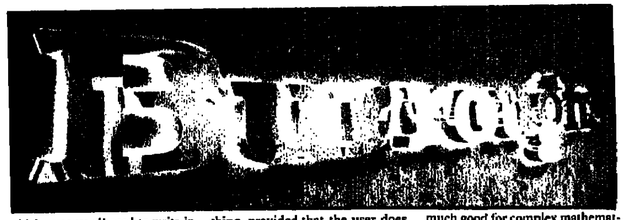
Whatever Burroughs users may think about price, performance and support, they are usually content on the twin issues of compatibility and upgradeability. Burroughs has been trying with increasing success to link its name with these two words and now claims virtual source code compatibility across its mainframe range from the B1900 to the B6900.

There are now only minor differences between the Cobol compilers for the B1900 and the much more powerful B6900, even though the hardware architecture is very different.

Burroughs has held regular meetings to discuss compatibility of system software for 10 years now, and since bringing out its first medium range machine in 1968, has tried to offer a smooth upgrade path for its users.

With Linc now firmly established in the centre of Burrough's software armoury, and compatibility still a major selling point, Burroughs must fancy its chances of holding its own against IBM, says Philip Hunter, especially as the company is aiming at compatibility with IBM machines as well as with its own. Even its network architecture is compatible with IBM's SNA.

Compatibility brings bliss



RIPAULTS, maker of wiring equipment in Enfield, Middlesex, recently upgraded from a Burroughs B800 to a B1900 CMS system. Happy with the changeover, Ripaults' company secretary Eddie Marks says:

"Because the software and data were completely compatible between the two systems, we were able to have a well planned, smooth changeover to the B1900, and then go on to take advantage of the greatly increased power of the new system to instal new applications."

Starkey Laboratories, which makes hearing aids in Handforth, Cheshire, recently completed the lower level upgrade from a B80 small business machine to a B930 mini.

"We didn't want to begin again from scratch and so the upgrade to the Burroughs B930 enabled us to continue using the same programs and files," says Starkey management accountant Phil Jackson.

Part of the aim of the upgrade was to begin linking up with the company's French operation using the Packet Switching Network.

Burroughs has extended communications compatibility down to the CMS range of minicomputers with its BNA, Burroughs network architecture. BNA also serves a useful purpose in allowing Burroughs computers to hook up with IBM mainframes using systems network architecture (SNA).

This allows Burroughs to gnaw away at those big banks, such as Barclays, where IBM has supplied most of the hardware. General systems manager Mike Harrison, who worked for IBM until a year ago, says that Burroughs has come to terms with IBM's dominance of the commercial mainframe market. The company is therefore aiming at compatibility with IBM machines as well as with its own.

Master control program (MCP) underpins software compatibility within each range of Burroughs computers, and is also designed to make the jump between ranges as easy as possible.

All Burroughs' operating systems are based on MCP. But master control program is a bit of a misnomer because MCP on the CMS range is vastly different from MCP on the mainframe range starting with the B1900. So it could be said that by calling it MCP, Burroughs is trying to look more compatible than it really is.

Nevertheless, Burroughs can claim with some justice that MCP gives almost complete compatibility within the CMS range up to the B1900, and within the mainframe range from B1900 upwards. The B1900 is the changeover machine, running either in CMS mode, or in native mode, although not both at the same time.

Users wanting to switch from CMS to the mainframe range, perhaps because they want to have database management facilities, can do so on the B1900 without recompiling.

But there are fundamental differences between the MCP for CMS, and the mainframe version, although Nockels points out that some commands are common to all versions of MCP. One such common command is MX, meaning mix, which gets a list of all programs currently running on the compiler.

There is also a common command for disc loading, giving compatibility between the different kinds of disc allowed. "If the user changes his disc, why should he change his program too?" asks Nockels rhetorically and triumphantly.

Under the control of MCP are the other two vital pieces of operating software, network definition language, NDL, and message control system, MCS. Many users just run under NDL, but if there are many applications running concurrently, MCS is needed to route messages from a terminal to particular programs.

"We didn't want to begin again from scratch and so the upgrade to the Burroughs B930 enabled us to continue using the same programs and files"

NBL defines the number of communications lines in a system, and the number of peripherals attached to each line. It also specifies the type of peripheral, whether it is a B20 micro, a printer, or a dumb terminal for exampie, and uses the information to generate a program to drive the network under control of the MPS operating system.

Apart from the operating systems, the two key pieces of Burroughs' system software are the DMS/II database management system and the Linc systems generator.

DMS/II offers standard database creation facilities and allows the user to write commands for editing as well as building databases. It is available only on the B1900 and above.

But it is Linc, more than any other product, that excites Burroughs systems people, who claim that it puts Mantis and other development tools used on IBM systems in the shade.

Linc, like Sperry's Mapper product, is the result of an effort to give users more sophisticated software for building transaction processing systems.

"IBM will catch up with Linc in a year or two," Burroughs systems people concede condescendingly, "but by then Linc will offer artificial intelligence, so that users will not have to redesign continually the same old systems."

In theory, you can go straight into Linc from a user specification of a commercial system and write in LDL, Linc definition language, which generates Cobol statements and the appropriate database entries.

To its admirers, Linc is a self-documenting systems language which removes all need to write in Cobol. Linc does allow systems to be patched up with Cobol, but this is a messy business not encouraged by Burroughs.

So the question is, can Linc do everything that a Cobol programmer and an analyst/programmer could do together?

The answer is, almost everything, provided that the user does not get too carried away by the unfamiliar freedom that comes with the cut-in development time. There is a danger that the system may get too complex and become hard to maintain, which is just the opposite of the intention.

Linc is limited to commercial applications, and like Cobol, is not much good for complex mathematical work.

With Linc now firmly in the centre of Burroughs' system software armoury, and compatibility still a major selling point, Burroughs must fancy its chances of holding its own against IBM while others continue to fall by the wayside.

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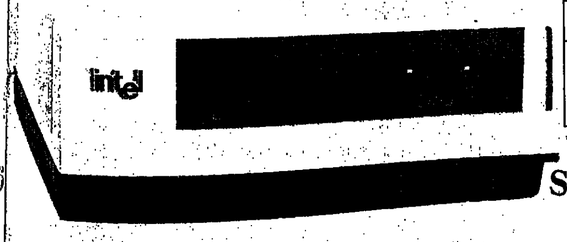

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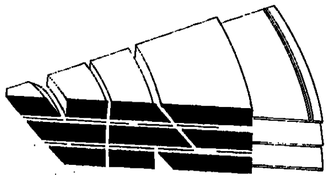

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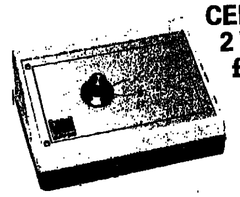

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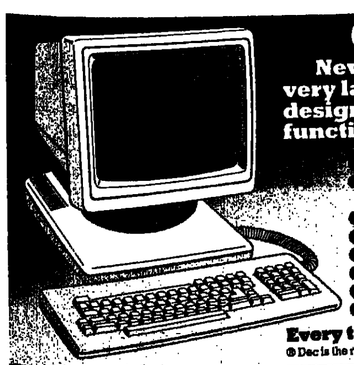

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Burroughs learns how to live once more

■ From page 15

applications software development centre at Feltham, Middlesex, which employs 200 staff.

Under Blumenthal, Burroughs has set about trying to re-assert its dominance in the small systems market with the launch in 1982 of its 16-bit Intel 8088-based B20 range of microcomputers, developed by Convergent Technologies.

Burroughs' co-ordinated push back into the small systems market in the US has been bumpy. There was a major change in its US marketing strategy in mid-1983.

In the US Burroughs had a two-tier distribution structure, selling to about 30 distributors which then built up a network of dealers. Last summer, Burroughs decided to drop most of its B20 distributors in the US and sign up dealers directly, saying the distributors had failed to meet their quotas.

According to US reports, US distributors blamed uncompetitive pricing, delayed product enhancements – particularly MS-DOS and CP/M capabilities – as well as unfair competition from Burroughs' own direct sales force.

Blumenthal's success in turning the company around is reflected in the company figures, with total revenues rising 17.5% to $3,405 million in 1981 and again by 22.9% to $4,186 million in 1982. Net profit has fluctuated from $82 million in 1980 to $149 million in 1981, but to $117 million in 1982.

Burroughs is holding its own compared with the rest of the "Bunch", the unflattering term for the second division (after IBM) of traditional mainframe vendors: Burroughs, Univac (now Sperry), NCR, Control Data and Honeywell.

Looking at 1982 total revenues, but excluding revenue from interest, a *Businessweek* survey last summer placed Burroughs fourth out of the five with over $4 billion in revenues, the highest being Sperry with $5,571 million and the lowest, NCR with $3,526 million. Burroughs had the largest percentage increase in revenues compared with 1981, but also the biggest percentage drop in profits of the Bunch.

Gartner Group's review of the top 30 US data processing companies for 1982, which looked purely at DP revenues, put Burroughs at No 3 and best of the Bunch, but behind Digital Equipment and IBM. The *Financial Times* list of Europe's top 25 computer manufacturers saw Burroughs climb from 10th to seventh place in 1982 with European data processing revenues up 30.7% to $970 million.

However, on the research and development side, although Burroughs boosted its R&D budget in 1982 by 24.8% to $220.6 million, that sum accounted for only about 5.4% of revenue, according to *Businessweek*. In comparison, Honeywell, NCR and Sperry each invested about 7.1% of their sales revenues in R&D.

The share price fell steadily from a high of $87½ during the first quarter of 1980 to its lowest point in years of $27⅛ in the fourth quarter of 1981. It climbed back to $49 a share in the fourth quarter of 1982 and is currently hovering around the $50 mark.

Blumenthal now has accomplished a change of direction for the company and significantly raised the morale and motivation of his workforce without having previously been in the computer industry. Before joining the Carter administration he had headed washing machine company Bendix.

But it caused no little surprise when, in August 1982, Burroughs appointed Bob King, formerly chief executive of Scottish and Newcastle Breweries, as managing director of its UK subsidiary, Burroughs Machines.

In the same month King was joined by David O'Brien, who had been UK managing director of Cray Research from 1979.

King is convinced that Burroughs is committed to the UK. "The company at the highest level wants to continue here, and that is why I'm here," he said soon after his appointment. "I would not be here if I did not believe in the company or that it is committed to the UK."

Burroughs' UK subsidiary has better claims than most US subsidiaries to be considered British. Its first manufacturing plant was opened in Nottingham in the last century – in 1899 – and it now has five manufacturing plants.

Burroughs' B90 small business minicomputer system was developed here and is manufactured at Cumbernauld in Scotland. The company claims that all the Burroughs equipment sold in the UK is either manufactured in the UK or the cost of it is covered by the value of equipment exported by the company. In 1982 Burroughs exported £53 million worth of goods from the UK.

In terms of size and manpower employed by Burroughs, 1980 was the peak year in the UK. There were 3,000 staff involved in manufacturing and 2,000 in marketing and support. There were also eight manufacturing plants occupying 1.2 million square feet.

Now there are five manufacturing plants, around 2,000 staff involved in manufacture, and manufacturing area totals 867,000 square feet (including an extra 100,000 square feet at Livingstone, announced last year).

The main factories are at Cumbernauld, Dumbartonshire, and Livingstone in West Lothian. The former makes small computer systems, encoding equipment and printers and is taking over the manufacture of disc drives and cassettes previously made at its Glenrothers plant, which was one of those closed. The Livingstone plant manufactures encoder systems for banking and financial institutions.

In addition to the manufacturing plants, Burroughs' software development centre at Feltham has expanded from 77 staff to 200 since 1980.

The Burroughs that King and O'Brien joined in August 1982 was beset by litigation. Customer dissatisfaction was such that 150 companies had taken out lawsuits against Burroughs by that time, mainly involving its B80 and B800 small computers.

On top of the quarrels with its users, Burroughs was also locked

KING . . . Keeping quiet about plans for digital communications switching.

Burroughs feels that it is pointing away from the shallows

in a court case against Oxford Regional Health Authority for giving a £500,000 contract to ICL, even though Burroughs came out top in the technical evaluation.

The case stemmed from Burroughs' desire to grab more of the public sector market, dominated by ICL. The appointment of O'Brien, who had considerable experience in public sector marketing with IBM as well as Cray Research, reflected that emphasis.

"We don't mind there being a government procurement policy as long as it's clear what it is," said O'Brien.

Very soon after his appointment, however, Burroughs quietly dropped the case after a top level meeting between Blumenthal, King, the Information Technology Minister Kenneth Baker and Sir Peter Cary, Permanent Secretary at the Department of Industry.

Assurances were given to the company that public sector contracts would be awarded in future according to EEC and GATT (General Agreement on Trade and Tariffs) rules on open tenders.

That case also resulted in a shift of policy at Burroughs, away from direct frontal assaults on the public sector. "We are now aiming primarily at independent institutions that rely on government influence and support rather than on central government," said O'Brien.

In the public sector, therefore, Burroughs has aimed at institutions such as magistrates courts and the police. The Police National Computer at Hendon comprises four 7000 series Burroughs mainframes.

King and O'Brien took steps to build up Burroughs' asset base in the UK and to rebuild customer confidence.

King concentrated initially on "gaining financial standing and strength".

"In the old days," he says, "computer companies didn't worry about having a sound financial base, but it is important to have a sound asset base. With it there is no way we'll vanish."

Burroughs' assets in the UK are now over £100 million, and King added that company borrowings were now lower than two or three years ago.

Burroughs has given a lot of attention to promoting customer confidence, particularly through customer support and service, the two areas which generated the bulk of complaints.

"Eighteen months ago there were lots of letters from customers expressing concern," says King. "We only get a few letters now. Of course, we haven't solved all the problems, but there has been a dramatic improvement."

The lynchpin of that turnaround has been Burroughs' new real time fault monitoring systems, called Resource Control Centres which are designed to provide rapid and effective response to customers with problems.

The programme started in 1982 and there are now 30 such centres worldwide.

"Resource Control Centres are not just buildings with a computer to log calls," said Peter Loveder, general manager for post-installations service. "They are management alert systems and management information systems."

Loveder explained that users with problems have just one telephone number to contact the whole support organisation. On receiving the user's call, the Customer Service Engineering organisation takes on the problem. It is linked to the Resource Control Centres for advice – and, if the problem is complex, a series of alerts is sounded so that, if necessary, the problem can be dealt with on the other side of the Atlantic.

Being online also enables Burroughs to keep track of average response times. The number of responses made in under four hours has, according to Loveder, increased from 60% in 1981 to 67% in 1982 to 75% in 1983. And the average response times for mainframe users (B1000-B7000 series machines) decreased from 1.8 hours in 1982 to 1.3 hours in 1983.

Response times for microcomputer users with problems (B80 and B900 machines) decreased from 3.3 hours to 3.0 hours over the same period.

Another support function set up in the UK in 1983 was Burroughs' Technical Resource Centre, set up at the cost of £2 million at Milton Keynes. That organisation, opened last October, aims at streamlining the supply of parts.

"Having arrived on time with the help of the Resource Control Centres, we need to fix the problem on time," said Loveder. "The Technical Resource Centre ensures that our field operation is underpinned with centralised logistical support."

Burroughs is keeping up the emphasis on support organisations this year with a new Field Support Group, due to become operational in July. That group will give product support for systems and environmental software and will give special support for new products until that support is devolved into the Resource Control Centres.

In addition to the major push to extend support and service operations, Burroughs in the UK has also set up two organisations to sell into the small business systems and micro markets: the Independent Sales Organisation (ISO) and the Computer Business Centres.

Last April Burroughs set up its Independent Sales Organisations. These are third party OEMs which sign up with Burroughs to add value to small systems intended for small business not catered for by Burroughs' direct salesforce.

There were 25 ISOs by the end of 1983 and Graham Margetson, general manager of sales and marketing for both organisations, expects there to be 70 or 80 by the end of 1984.

"Independent Sales Organisations are not dealers," said Margetson. "They open the box and add value. ISOs have backgrounds in vertical markets and plug gaps that we don't cover. Because they add value, they avoid clashes with the Burroughs direct salesforce."

The Computer Business Centres, seven of which are being opened this year, will form Burroughs' other prong in its efforts to regain the small business market. Small businessmen will be able to attend centres to learn about computers and talk to a cross-section of Burroughs staff with more emphasis on communicating with support staff.

The first six centres will be in Manchester, Leeds, Birmingham, Bristol and London (where there are to be two), with a further centre to follow in Glasgow.

Another plank in Burroughs' small business strategy will be an £11 million Education Centre which will open in April at Milton Keynes. The Education Centre will be headed by the ex-director general of army transport, and former assistant commandant at Sandhurst, Major General William Allen. It will train third party marketing personnel responsible for selling Burroughs systems through ISOs.

What of the future? King is keeping quiet about Burroughs' plans for digital communications switching, although last year there were extensive talks between Burroughs and Plessey.

O'Brien emphasised the importance of networking in Burroughs' future strategy: "We now have a philosophy of offering solutions that can co-exist with other manufacturers' solutions," he said. "That is why we are developing networking compatibility and why we are very active on standards committees."

Using the analogy of the captain of a giant oil tanker changing his ship's direction, Blumenthal's course correction initiated in late 1980 has worked its way through the corporation so that now in 1984 Burroughs feels that it is pointing away from the shallows and is firmly on course for the rest of the '80s.

Traditionally a business equipment manufacturer, Burroughs moved into the nascent computer industry.

PEOPLE

■ *CPU Peripherals is expanding its sales management team by adding two new product managers. In charge of the Maxell Magnetic media range of products comes* **John Heselden** *(right), formerly a sales manager with Stratfors. With product sales responsibility for printers is* **David Steadman** *(left) who comes from a sales management position at Centronics. Both will develop the dual dealer/OEM marketing opportunities. A promotion completes the changes; salesman* **Simon Howarth** *takes over the Western OEM sales region on the Hazeltine/Esprit range of VDUs. Shugart disc drives and DEI tape drives continue to be the domain of product manager* **Richard Watts.**

■ Megabyte, the Horsforth-based computer systems company, has appointed **Barry Seaman** as sales manager, mini systems. Previously he worked for Data Sciences International of Leeds for 11 years. **Len Cheah** has been promoted to chief programmer. He joined Megabyte in 1981 and will now be supervising 20 programming staff.

■ **David F. Thorpe** has been appointed sales manager of Micromos Systems, a member of the Telemetrix Group. Thorpe will be responsible for all marketing and sales activities for Report, the new, intelligent colour computer terminal launched at Compec. He will also be responsible for sales of the add-on graphics boards.

■ **Mark Robson** (above) has joined WordNet International as marketing and support services director. He is a former communications manager at Wordplex, later becoming product marketing manager for communications with ABS. After a year in this post he joined Wang UK as networking manager for the full Wang product range.

■ **Rob Harris** (above) has been appointed managing director of NDC International, the London-based subsidiary of National Data Corporation of Atlanta, Georgia. He joins NDC from Visa International, the payment systems organisation, where he was business development manager.

■ The continuing growth of Cifer and the initiation of a second manufacturing site means that the board is being expanded to allow **Terry Cosgrove** to concentrate on his role as managing director and chief executive. **Oliver Newland,** currently a non-executive director, has been appointed non-executive chairman of the company. At the same time **Graeme Robinson,** previously with ICFC, is joining the board as full-time finance director on a 12-month assignment.

■ **Graham Stallard** has joined Rediffusion Computers as materials manager. Previously, Stallard worked as production controller at Sangamo Transducers.

■ Due to the success of its European operations, Megatek Inc is expanding its distributor network to venture outside the existing markets covered. As part of this plan, the European subsidiary based in Lausanne, Switzerland, is now taking on responsibility for all sales and marketing outside the US. **Michel Schwab,** who previously headed up Megatek in Europe, now assumes responsibility for the international operation, including sales in the Far East and South America.

■ **Martin Orchard-Webb** of Stroud, Gloucestershire, will soon be flying out to Fiji to take up a post as senior systems analyst and programmer with the Government of Fiji. He was recruited by the Crown Agents on behalf of the Overseas Development Administration under Britain's aid programme. Orchard-Webb went to Papua New Guinea to work for the government there for two years. Since 1980 he has been back in Stroud at the McEvoy Division of Smith International.

■ *Roy Chance (left) has joined MSA to support the company's international payroll and personnel system. Previously he was systems consultant at Zeda Computer Systems, and senior business analyst at Otwen Computer Services.* ***Alan Searle*** *(right) joins MSA as general ledger customer support consultant. He was project leader implementing the general ledger system at Roche Products.*

■ **Tony Sanders** has been appointed sales operations manager of Golden Wonder and HP Foods. He was formerly O & M manager for both companies.

■ AIM Cambridge Limited, the TEK Group's technical consulting subsidiary, has appointed **Roger Goscomb** as electronics group leader.

■ **Mike Evans** (below) has joined Geac as divisional manager for general systems and communications products. He will be responsible for all sales and customer marketing of networking and communications products outside the existing product groups of libraries, retail banking, wholesale banking, leasing and insurance. He will also be responsible for all OEM sales of general systems. **John Burton** will be responsible for development and product marketing of communications products within Europe.

DIARY

JANUARY 20

The Paperless Office – ways and means of making information technology productive in modern offices. Seminar by Oyez Scientific and Technical Services, London. Details: Helen Raquet, 01-236 4080.

UK APL User Group annual general meeting, Imperial College of Science and Technology, London. Plus APL – the natural language for graphics. Details: Dick Bowman, 01-248 1202.

JANUARY 23

Informal meeting, Databases on micros? at Castle Hotel, Norwich. Details: BCS, 01-637 0471.

JANUARY 23-26

IBM VSE Advanced Operations and Problems Analysis. Course presented by Protocol Operations. Royal Scot Hotel, London. £340 plus VAT.

JANUARY 24

Manufacturer visit featuring KAR-4000 and Komstar. Kodak, High Holborn, London, 9.45am. British Computer Society Microform Group. Contact Chris Marles on 01-250 3217/8.

JANUARY 25

So You Think You Know How to Select Staff? British Computer Society Manchester. Speaker, George Penney, NCC, Oxford Road, Manchester, 6.15.

Word Grammar and Modern Linguistics. British Computer Society Natural Language Translation Group. Speaker, R. A. Hudson, University College. King's College, Strand, London, 6.00.

Visit to North Tyneside Information Technology Centre. British Computer Society Newcastle. Contact Ian Rees, North Shields 575029.

Information Technology in the Home. British Computer Society Sussex Micro Group. King and Queen, Marlborough Street, Brighton, 7.15.

JANUARY 25-26

Personnel – the Microcomputer Solution. Half-day seminar presented by Missing Link Computers, World Trade Centre, International House, 1 St Katharine's Way, London, E.1. Admission free. Details on 01-349 4711.

JANUARY 26

Very large Scale Integration. British Computer Society Merseyside. Speaker, J. Woodcock, GEC Wembley. Faculty of Science Lecture Theatre, Liverpool University, Brownlow Hill, 6 for 6.30.

Schools Computing Visit. British Computer Society, South Yorkshire. Rowlinson School, Dyche Lane, Meadowhead, Sheffield, 7.15. Contact David Jinkinson, Sheffield 20911, ext 2173.

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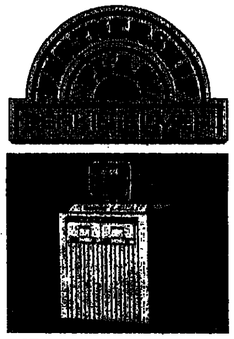
OEM's. Come and hunt with us.

The 3205 provides a great opportunity for OEM's and system builders in opening up a rich territory of new specific application areas where 16 bit micros just can't compete. In the Perkin-Elmer Partnership Plan we'll supply you with marketing back up, training, software and hardware advice. We'll actually feed through sales leads exclusively to you. Because we need your help in exploiting a major business opportunity for both of us.

*UNIX is a trademark of Bell Laboratories



To Geraldine Duffy, Perkin-Elmer. Please send me more information CN2

Name

Position

Address

Phone

Perkin-Elmer Data Systems Limited, 227 Bath Road, SLOUGH, Berks SL1 4AX Telephone: (0753) 77777 Telex: 848 721.

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Full page 39 x 6 cols £4568

Box nos. £5 extra. Address back to c/o Computer Weekly, Classified Dept., Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

Systems Support Analyst

City — **£10,000 - 12,000**

Our client is the holding company of a number of operating subsidiaries which together form an integrated group engaged in oil and gas exploration and production and in the refining, transportation and marketing of crude oil and petroleum products.

The initial responsibilities of the Systems Support Analyst will be to write user manuals and training material for a sales order processing system and assist in the development and implementation of an accounting package.

This is a user orientated position and the successful candidate must possess excellent communication skills as well as good planning and organisational ability.

A sound knowledge of DP principles and concepts is essential and experience in Wang VS systems and telecommunications will be an advantage.

A good understanding of CPU to CPU remote networking would be an added advantage.

The successful candidate will be offered a salary relating to qualifications as well as a comprehensive benefits package.

Find out more – contact Knight on 01-491 4706 quoting Ref YY404.

Knight
Confidential Reply

COBOL Programmers

Bedford — **c£10,000**

Our client, a leading manufacturer of electrical control equipment, has recently upgraded its computer hardware to an IBM 4341 operating under DOS/VSE. This reflects the increased importance of information systems to the company. There is in place an integrated suite manufacturing and commercial systems based on DL/1 and CICS.

To help the next stages, which includes specific emphasis on a real time manufacturing control system, they require additional COBOL Programmers to join their existing project team. A knowledge of CICS and/or DL/1 would be a distinct advantage.

Attractive salaries are envisaged based on knowledge and experience and will be well in line with market rates. The company benefits include Superannuation and Life Assurance scheme, social and sports facilities and five weeks annual holiday.

These positions offer interesting work in a pleasant environment with good opportunities for career advancement. Re-location expenses will be paid where appropriate.

Find out more – contact Knight on 01-491 4706 quoting Ref YY405.

Knight
Confidential Reply

ICL COBOL Programmer

(Money Brokers) — **City** — **to £10,000**

Our client is a major International Money Brokers based in the City. Their computer centre currently houses an ICL 2904, ME29 and an ICL System 25 is now being installed to be used as a development machine. Plans are underway to increase their hardware by the end of 1984.

The COBOL Programmer will be engaged in the development of Financial Broking systems based on the ICL System 25. This will involve working as a member of a new team.

Candidates should have upwards of eighteen months ICL COBOL programming experience gained in a commercial or financial environment, preferably on ICL System 25.

The company will present the opportunity for the Programmer to progress into an analysis role.

The successful candidate will be rewarded with a benefits package which will include a non-contributory pension scheme, season ticket loan and medical health insurance.

Find out more – contact Knight on 01-491 4706 quoting Ref YY403.

Knight
Confidential Reply

Programmer Analyst/Programmer

(International Banking Systems) — **to £10,000** — **to £12,000+Car** — **Central London**

Following major success in introducing their real-time International Banking Information System (IBIS) to the UK and European markets, Tymshare (UK) is now expanding its Customer Support Group with the addition of a Programmer and an Analyst/Programmer.

In addition to providing customer support and tailoring the system to suit client requirements, the successful candidates will be involved in major new developments of the IBIS system which may involve some overseas travel.

Applicants should be able to demonstrate a background in either Banking or Financial sectors with programming experience in Basic +2 ideally using VAX hardware. In addition, self confidence in dealing with customers and a high degree of initiative will be of importance.

These positions will suit dynamic individuals who wish to be presented with a ground floor opportunity in a progressive and expanding organisation.

Find out more – contact Knight on 01-491 4706 quoting Ref GK623.

TYMSHARE UK

COBOL Programmers

A move into Training — **Nationwide** — **c£10,000**

Our client is one of the largest providers of commercial computer training, both for private industry and the MSC sponsored training programmes. Their curricula cover a wide range of specialist courses encompassing both hardware and software training.

To continue their policy of expansion, our client is seeking articulate and enthusiastic people with the following qualifications:

* **COBOL Programming in a commercial environment**
* **BASIC an advantage**
* **Broad understanding of hardware**
* **Knowledge of structured design techniques desirable**

Candidates will have an aptitude for teaching and be able to demonstrate good communication skills.

The training centres are located in pleasant working surroundings and successful candidates will join a first class team of professional tutors enjoying an interesting and satisfying career.

Find out more – contact Knight on 01-491 4706 quoting Ref GK624.

Knight
Confidential Reply

Analyst/Programmer

Harrow — **c£12,500**

Our client is a multinational organisation engaged in the supply of materials for the construction industry.

Their computer centre supports a wide range of commercial applications based on IBM System 38 and Honeywell 62/50 hardware.

A variety of developments projects are planned covering many areas, including a sales forecasting system.

Ideally your experience will include the following skills:

* **IBM Systems 38 (or other GSD)**
* **RPG3 (or RPG2)**
* **Commercial systems**
* **Client liaison**

The successful candidate will receive an extremely good earnings package, excellent promotional prospects, and the opportunity to join a progressive industry leader.

Find out more – contact Knight on 01-491 4706 quoting Ref RC351.

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Name
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SENIOR APPOINTMENTS – £14K +

Computer Systems Manager

£16,000 plus Car plus Major Benefits

★ *New Appointment*
★ *New Hardware*
★ *New Systems*

We are a major UK Manufacturing Distribution Company, with several Brand Leaders, and a substantial growing Export Business.

From our modern UK headquarters, based in the N. Home Counties, we provide a central computer co-ordination facility controlling centres throughout the British Isles.

Our dynamic expansion record and ambitious '84 Corporate plans have created an urgent need to expand the current scope of our computer usage dramatically.

To address this requirement we wish to appoint an experienced Computer Systems professional to head-up the next critical phase of our Development.

Our profile calls for an experienced Systems Manager, with a high degree of Technical competence and management skills. Demonstrable ability to understand the 'business needs' (manufacturing and distribution problems in particular) together with highly developed User-liaison skills are essential, since the provision of a first-class service to the users is the priority.

A strong association with IBM System 34 and/or System 38, and working familiarity with RPG will be highly advantageous.

In order to secure the highest calibre individual available, an extremely attractive package is offered, including a high base salary, annual bonus, Company car (plus petrol allowance), pension, life assurance, B.U.P.A., four weeks holiday and relocation package if appropriate.

For a private and confidential discussion on this opportunity contact **Nick Reid** on **01-935 0671** during office hours or **01-644 1973** evenings or weekends.

Alternatively send your C.V. immediately to him at the London office.

N. Home Counties

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Project Managers

New Appointments

SOUTH EAST
NORTH OF ENGLAND

to c.£22,000+car

dependent upon experience in Merchandising, Retailing, and Point of Sale Systems

for a major fast moving consumer goods group with a commitment to develop and implement a whole range of new systems to meet burgeoning business information needs.

Reporting to the Systems Development Manager the appointees will be responsible for confirming, developing and implementing retailing, merchandising and point of sale systems, as relevant to experience and preference, utilising new and advanced hardware and software technology.

You are a senior systems analyst or project leader experienced in POS, merchandising, or retailing systems development from feasibility to in-store installation in a large scale high technology environment. The systems you will develop and implement will form the basis for further significant developments towards the fullest possible computerisation of the retail business management and decision processes.

A major capital investment programme in high technology is underway, and these appointments offer green field opportunities to move into managing front edge business systems automation.

Dependent upon the appointees location preferences, the appointments will be situated either in the South East or the North of England.

Excellent starting salaries will be offered at all levels dependent upon experience, and persons with the required breadth of experience and potential can look to commencing around £22,000 plus a company car.

There are also a number of positions at PROJECT LEADER level available which could be of interest to Systems Analysts with relevant retail systems experience seeking their first significant move into project management, sooner than later.

Please send a ONE PAGE career history list, or a CV, or write or telephone for a Personal and Professional History Form, to SARAH KENNEDY, Executive Selection Division, quoting reference number GW1180, at the address below. Applications are invited from either sex.

(7313)

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied Systems

SENIOR APPOINTMENTS – £14K +

TECHNICAL SUPPORT CONSULTANTS

London Base **£14,000 + Car + Bonus Scheme**

Our Client is a World leader in systems software who have developed a unique and comprehensive range of IBM Systems Software products, acclaimed as being the most advanced in todays market, with a well earned reputation for excellence. Undoubtedly, part of their success is owed to this market edge, though clearly in evidence is a well trained and highly motivated team of product specialists and sales executives who have the support of skilled technicians.

Due to the recognition of their products, their expansion plans for 1984 are extremely exciting. They, therefore, require a number of skilled technical support consultants to be based from their head office in London.

There are two main areas where opportunities exist: Firstly, within the section that supports existing clients, there is a need for a specialist who enjoys the 'hot-line' environment. This is an in-house position requiring a person with IBM large systems and low level ASSEMBLER experience who can read dumps, assess a problem analytically and provide a solution to clients' problems over the telephone.

Secondly, support is required within the 'new client services' area: Here the person would work in the field providing an interface to sales and, as well as being technically sound, should have the ability to give presentations, build up good client relationships, giving support on the products through to implementation.

Here are opportunities second to none for skilled, ambitious professionals.

In the first instance contact our advising consultant Pam Hale on 021 236 1999 (24 hour answering service) or 0908 606831 (evenings and weekends). Alternatively submit a curriculum vitae to the Birmingham office.

CTA RECRUITMENT CONSULTANTS

Cathy Tracey & Associates Ltd

PHOENIX HOUSE, 1-3 NEWHALL STREET, BIRMINGHAM B3 3NH. TEL: 021-236 1999 TELEX 825264

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attracts the best

(7317)

Systems Manager

Maidenhead — to £16,000 + Car

Leasco Software Limited is undoubtedly one of the UK's leading Computer Systems Companies and has an enviable record of growth and success. Because of further growth our Commercial Systems Division Production Group needs to recruit a third Systems Manager.

Reporting to the Group Manager you must be capable of running several project teams and directly supervising Project Managers. Initially the post will involve controlling a variety of Leasco managed activities for a single major client, including Leasco's own software development, support and consultancy, as well as the activities of hardware and software sub-contractors. In the longer term involvement with more than one client can be expected.

Proven skills in planning, team building, staff motivation and effective client liaison will be required. Experience in business applications is vital, and experience of MIS Systems Implementation (especially in Central Government) will be an asset.

In addition to the salary and car you will enjoy a first class range of benefits including profit sharing, free lunches and a subsidised pension and permanent health scheme.

Please telephone or send your c.v. to: Patricia Mole, Personnel Officer, Leasco Software Limited, 150-152 Bath Road, Maidenhead, Berkshire SL6 4LD. Tel: (0628) 23391.

leasco SOFTWARE LIMITED

SPL International

ADVANCED INFORMATION TECHNOLOGY AND KNOWLEDGE ENGINEERING OPPORTUNITIES TO JOIN ONE OF THE UK's LEADING GROUPS. SALARIES TO £18K.

SPL International's Research Centre is the Company's corporate focus for advanced information technology. The Centre's work involves the design, development and marketing of software tools and technology for use within the Company and for its clients in the UK, Europe and the rest of the world. During 1984 the Centre will be making investments in new Knowledge Engineering tools and advanced knowledge-based application.

In support of this programme applications are sought from individuals who have experience of and can demonstrate achievement in one or more of:

KNOWLEDGE ENGINEERING

Consultancy, design or implementation skills in K.E. including the development of at least one significant application preferably in sensor data processing or with a large MMI component. For senior positions a broad group of KBS techniques is essential.

SOFTWARE TECHNOLOGY

Design and implementation of advanced interactive software environments including object oriented, applicative, list processing and logic programming languages, relational database and expert system shells.

EMBEDDED SYSTEMS

Consultancy or project management skills in embedded applications including plant monitoring and control, EM and acoustic sensor data processing, tactical simulation and military or related command and control systems.

The Research Centre is located in an attractive part of the UK at Abingdon, near Oxford. It maintains strong links with other SPL Divisions, both in the UK and continental Europe. Extensive computing facilities are installed including a powerful VAX configuration, PDP service machines and a wide variety of micros. Software environments include POPLOG, PROLOG, LISP, ADA, SAGE, ALGOL68, PASCAL and RTL/2.

To applicants with the right experience, motivation and innovative skills these opportunities offer:

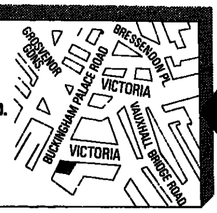
- ★ **Competitive salary with relocation as appropriate**
- ★ **Excellent career prospects in a growing organisation**
- ★ **Scope for innovation at the front of current thinking**
- ★ **Visibility and recognition of individual effort in small teams.**

Write with c.v. or call: Cheryl Carter, SPL International Research Centre, The Charter, Abingdon, Oxon. (Tel: 0235 24112).

(7282)

SENIOR APPOINTMENTS – £14K +

TUESDAY JAN 24th
THE GROSVENOR HOTEL BUCKINGHAM PALACE RD. VICTORIA SW1
4.00 pm – 8.00pm
Drop in for a drink and a chat.

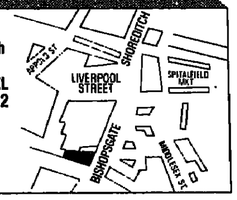


We'll be here

We'll be here

Sainsbury's is the UK's leading food retailer. In our last financial year sales increased 17%, profit was up 20% to £107 million and we created an additional 3,300 jobs.

WEDNESDAY JAN 25th
THE GREAT EASTERN HOTEL LIVERPOOL STREET EC2
4.00 pm – 8.00 pm
Drop in for a drink and a chat.



DP PROFESSIONALS four routes to success

Come along for an informal discussion

Our Systems Department is vital to our on-going success and is rapidly expanding to satisfy business growth. We are currently changing from ICL to IBM hardware and our present configuration comprises IBM 3033 and Atlas 10 mainframes.

We have a major commitment to a significant on-line database systems programme covering distributed stock control, purchasing and management information systems. We are now looking for additional DP Professionals to help us develop our business into the 1990's.

Call in to one of our open evenings, we will be pleased to meet you and discuss in greater detail the outstanding career opportunities we have to offer.

If you can't make it on any of the dates, please ring Lorraine Cathersides on 01-921 6047 for an application form or to arrange an informal discussion with our Systems Managers.

Alternatively, please forward a detailed c.v. to her at J. Sainsbury plc, Wakefield House, Stamford Street, London SE1.

Senior Database Designers
up to £15,000

You should have a solid IBM programming and systems design background with at least 2 years experience in the design and implementation of DL/1 under CICS or IMS DC. Experience of performance monitoring and IRC would also be useful.

Senior Analysts/Analysts
up to £13,500

Responsibility will be to investigate, design and implement new systems. Experience must have been gained with commercial applications in an IBM environment and a practical knowledge of CICS and DL/1 would be an advantage.

Senior Programmers/Programmers
up to £11,000

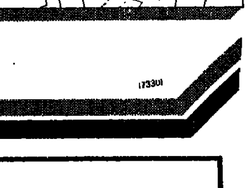
You should have at least 2 years proven IBM COBOL experience with CICS. DL/1 would be an advantage.

THURSDAY JAN 26th
SAINSBURY'S HEAD OFFICE STAMFORD HOUSE RENNIE STREET OFF STAMFORD STREET, SE1
4.00 pm – 8.00 pm
Drop in for a drink and a chat.

We'll be here

We'll be here

FRIDAY JAN 27th
THE CHARING CROSS HOTEL STRAND WC2
4.00 pm – 8.00 pm
Drop in for a drink and a chat.



For all posts, excellent benefits include:
★ interest free season ticket loan, after six weeks ★ subsidised restaurant
★ profit sharing after 2 years' service ★ pension scheme
★ share option scheme after 3 years' service
★ relocation assistance, where appropriate.

SAINSBURY'S

(7330)

GENERAL SALES MANAGER

superb opportunity for young professional

£16,000-£18,000 base **£35,000 total** **2·3L car**

Our client, a division of one of the world's most prestigious companies, is a leading vendor of switching products. With an excellent product range and high quality reputation, they now seek a young Sales Manager of the highest calibre to sharpen their sales and marketing profile.

Reporting to the Executive Vice-President and controlling four sales groups, you will be responsible for vigorously directing all sales efforts. With new products to be launched in the spring, you will be expected to fully exploit the market potential within new and existing business sectors.

Essentially, therefore, you will be an aggressive and tenacious sales professional, aged between 28–35, and with a proven success record. You will be a galvanising leader, able to hold your own in a variety of sales and management situations. Previous experience in communications or management is not essential provided you can demonstrate the above qualities.

This position surely represents an outstanding career opportunity for the ambitious young sales professional.

For further information, contact Paul Child on (07535) 56155 or write to: Kramer Westfield Associates Ltd., 23 Victoria Street, Windsor, Berks. SL4 1HE.

Recruitment Consultants to the Communications Industry.

Kramer Westfield

(7057)

REAL TIME SOFTWARE DESIGNERS

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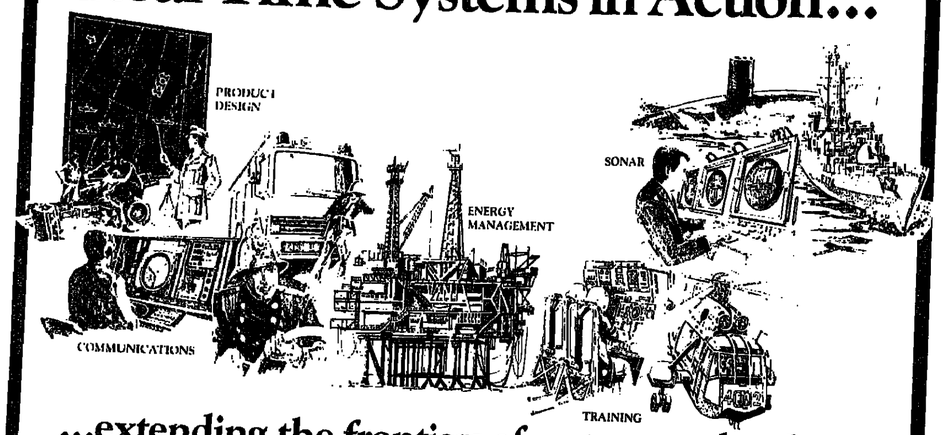

...extending the frontiers of systems technology

Through sound practical engineering innovation in systems and product design, we are helping Britain to lead the world in computer applications. Our influence and continuous involvement at the leading edge of this new technology is internationally acclaimed, pioneering new developments in real time computer systems and a wide variety of . . . **future generation Sonar, Training, Communications, Energy Management systems and products . . . for commercial and military applications.**

As an essential element of our exciting growth plans for 1984 we are very interested in hearing from . . . HARDWARE & SOFTWARE ENGINEERS and SPECIALISTS . . . with qualifications in an Engineering or Scientific subject and real experience and ambition in System Design.

Up to £14K . . . attractive benefits . . . excellent promotion prospects. MANCHESTER . . . realistic house prices and generous relocation assistance, where appropriate . . . your next career move to a more rewarding lifestyle!

For an informal discussion . . . please contact Colin Roberts, Career Development Manager on 061-428 0771 during office hours and 061-428 0194 after 5 p.m. and at weekends, or write to Colin, quoting reference 329/63, at Ferranti Computer Systems Limited, Bird Hall Lane, Cheadle Heath, Stockport SK3 0XQ.

(7289)

FERRANTI
Selling technology

CHIEF PROGRAMMER
1 year contract in Essex

A fixed one-year contract with paid holidays and a negotiable salary awaits the experienced programmer who can take a senior role in the IBM PL/1 programming environment of Britvic, a major soft drinks manufacturer. Experience of PL1, DL1 and CICS is essential, and knowledge of UNIPAY and Assembler language desirable.

Please send your CV to Mr G Barton, Systems and Programming Manager, Britvic Ltd, Britvic House, Broomfield Road, Chelmsford, Essex CM1 1TU

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Use your good qualifications and 5 10 years' REAL-TIME S/W experience to make this top job yours.

Call Vincent Molling NOW on 0560 6441 (24 hrs) for further details.

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Specialists in Real-Time

COBOL PROGRAMMER

Min. 2 years NCR IMOS/IRX experience. A working knowledge of CP/M also useful. Salary negotiable.

Please send full c.v. to Personnel Officer, BREAKMATE, 28 Concord Rd., London W3 0TH.

(7288)

CONTRACT PROGRAMMER
WANG VS COBOL, LONDON
For 3-4 Months
Phone Bernard Taylor on:
01-930 4041 (office) or Hayling Island (07016) 66768 (weekends)
FRASER WILLIAMS RECRUITMENT & TRAINING
(7235)

The Hunterskil Group of Companies

HUNTERSKIL SOUTH | H. Programming & Systems | Knight | HUNTERSKIL Hunterskil International Limited

The Hunterskil Group provides essential computer skills across Operations and Systems/Programming to installations throughout the UK and Overseas. Contract and Permanent opportunities exist throughout our Group and the following are some of the immediate contract requirements at Knight Computer Services and Hunterskil South.

CONTRACTS

Systems and Programming

- **ICL 2900 VME Programmers and Analysts** with TPMS and IDMS experience. **£400 to £500 per week** depending on experience.
- **ICL 2900 VME Technical Support personnel** preferably with IDMS/TPMS and BASE experience **£500 per week.** Start immediately.

We are always keen to hear from people with the above experience.

- **PRIME Analyst with on-line experience for 6 months assignment.** £500 per week.
- **VAX, VMS, DBMS Programmer** for 6 months contract start immediately. **£425.00 per week.**
- **Honeywell COBOL Screenwrite programmers.** £420.00 per week.
- **QUERY/FOCUS** 2 years implementation experience for 1 to 2 year contracts. **£500+ per week.**
- **CINCOM MRPS Programmer £430 + per week.**

Operations

- **DOS/VSE/VM POWER CICS** long-term contract. 2 years + operating experience. **£185.00 per week.**
- **MVS/JES2 Senior Operators** with IMS experience. **£234.00 per week.**
- **HP3000 MPE/4 Operator** for forthcoming requirement. **£200.00 per week.**
- **IBM System 38 Operator.** Inclusive of expenses **£240.00 per week.**
- **PRIMOS Operator.** 18 months experience. **£225.00 per week.**
- **ICL 2900 VME Operators.** No night shifts. 3 months. DME experience an advantage. **£240.00 per week.**

Call Nick Gill or Les Probert

HUNTERSKIL SOUTH
Specialist Computer Staff
Chatsworth House, The Broadway, Maidenhead, Berks, SL6 1LY
(0628) 75551
D of E Reg No SE7398

CONTRACTS

Systems and Programming

PL/1 Opportunities — MVS
We have a number of positions for PL1 + DL1 programmers for 3-6 month contracts and PL1 + CICS programmers for 6-12 month contracts. All the projects are on financial applications and will be based at our Customer in Middlesex. Ref. K1347

ICL 2900 VME COBOL – Some positions with IDMS/TPMS	Ref: P1258
DEC VAX 11/750, VMS, BASIC V.2 (ess), DATARIEVE – Beds	Ref: E1343
DECNET — Communications System Designer – Hants	Ref: E1354
MUMPS Programmer and Systems Programmer – Germany/Switzerland	Ref: E1294
Process Control Real Time – Long term a.s.a.p. – Herts	Ref: S1110
IBM 4341 IMS DBDC support – 3 months extendable – Beds	Ref: K1348
ICL 2/25 or ICL DRS all levels + all areas	Ref: S1333
HP3000 COBOL with HP Software Package exp – Brussels	Ref: P1307
IBM DOS/VSE Systems Prog, 2 yrs CICS/VS (Perf. Mon. VM/CMS DL1 useful) 6 months +, BRUNEI.	Ref R1351

Evenings and weekends contact Richard Kaluzynski on 01-840 1169

Operations

CASE DCX MULTIPLEXORS & MODEMS – Network Person for immediate 1 year contract in S E London	Ref: LF12
ICL G III/VME Operators to start in near future on long term assignment in **E. London.**	Ref: LF13
IBM 4341 VM-CMS DOS/VSE CICS – Senior Operators to start now for 4 month contract.	Ref: LF14
ICL MR29 TME IDMS – Networking and operating for indef. period to start in near future, Location Holland.	Ref: LF15.
ICL 2904 EXEC 3S – Operators to work on conversion in **Middlesex** for indef. period, starting end Jan. – begin Feb.	Ref: LF16

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We need professional contractors to work in teams on Link Associates' Managed Projects.
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These assignments start over the next six weeks.
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link

(7269)

Project Management

A sound knowledge and user-experience of PMI systems – typically INTERNET, ATS, ARTEMIS or ICL PERT, could qualify you for this exciting assignment.

Our client is a world leader in the design and development of capital electronic systems and is now introducing new management information systems as part of a commitment to pursuing advanced project management techniques.

If you are fully conversant with the concepts underlying the design criteria of large scale systems and with interfacing a PMIS with a company data base, you could lead, or assist in, the implementation of such a system. Having achieved this, you would either be assigned to a specific major project, or to the further development of the system, towards the automated production of management information, in a multi-project environment, covering the complete spectrum of activity.

The rewards include a competitive salary and an attractive range of big-company benefits. Career opportunities within this progressive organisation are excellent. Relocation assistance will be considered where appropriate to an attractive part of S.E. England.

Applicants should write with full personal and career details to Confidential Reply Service, Ref ACP 8914, Austin Knight Advertising UK Limited, London, W1A 1DS.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

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Salaries will be in the range of £8,000–£14,000 per annum according to level of appointment and experience, and with the more senior positions a company car is provided. There are also attractive benefits including BUPA membership and generous assurance with relocation to this very pleasant part of the country.

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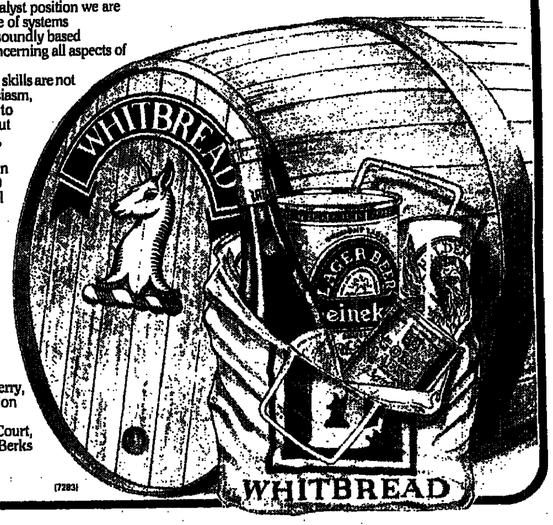

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In the computer business, it takes a professional to really appreciate another professional.
That's why at P & O Computer Services Recruitment Division, you'll find we speak your language.
Because we're a comprehensive computer organisation in our own right, we're familiar with every aspect of the business – our prestigious client list reflects our own repute in the industry. And, as a computer professional on the move, that can only mean good news for you.
This is a small selection from the many positions available. If your qualifications are appropriate to any, we'd like to hear from you.
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This post will cover all Wang's Office Automation Systems, both WP and DP. As well as conducting customer courses, you will be involved in briefing and updating our own sales and support staff, and in developing course content. The post will be based in the West End, although occasional travel will be necessary.
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Please send full CV to Christine Townsend, Wang (UK) Ltd., Wang House, 661 London Road, Isleworth, Middlesex TW7 4EH or tel. 01-847 1954 for an application form (24-hour service).

WANG
The Office Automation Computer People.

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PROGRAMMER/ANALYST £8,300-£9,590 p.a.
(Review pending)

The successful applicant will play a major role in the investigation, desigh and implementation of new systems and must possess the ability to communicate effectively with all levels of user. A knowledge of on-line techniques and/or database principles would be an advantage.

PROGRAMMERS £7,000-£8,050 p.a. (Review pending)

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An exciting career is offered to DP professionals who are prepared to work on their own initiative and accept the responsibilities these positions demand. In addition to a competitive salary structure, these positions also offer the following benefits:

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They currently require a Management Information Service Manager to head up the Data Processing Department and be responsible for the introduction, development and implementation of manufacturing and financial computer systems.
Candidates will have considerable Project Management experience and must possess a sound Data Processing background including knowledge of telecommunications. Equally important is a strong personality with the necessary drive and initiative to provide decisive management and the ability to communicate effectively at all levels.
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As a major international systems consultancy, Cord can offer you everything that reflects professional excellence. Our specialisation in the high technology areas of computing means that our expertise is in demand for short term consultancy up to million pound projects. We are dynamic, profitable and developing fast. What's more, we understand exactly what makes someone like you tick.
Consider a diverse range of applications embracing communications, real time, and defence, each of which will fully stretch your capabilities. You'll work at the forefront of technical software design, using the finest available facilities and making a tangible contribution at every stage from concept through to completion. What's more, you'll be working towards implementation every time.
No one could extend your experience so quickly, and nowhere will you find better prospects. You'll be continually challenged by our flexibility, working both inhouse and at client locations, with well defined responsibilities.
Matching our pace means being bright, presentable and outgoing. Aged 25-35 you're probably a graduate, although our emphasis is primarily on experience, which must have been gained over at least 3 years in a relevant scientific or technical background, where you will have become familiar with technical and real time languages such as Assembler, Coral or Pascal. All this will bring you career development fast, with early management responsibility.
Salary wise, we're talking up to c£15,000 depending on your ability. And there are many other benefits such as first class training, free personal PPP insurance, a pension scheme, expenses and relocation assistance if necessary.
So phone Derek Pearson on Staines (0784) 63911 during business hours or on Bromley (0689) 50709 evenings and weekends.
Alternatively, if you prefer, write to him at Cord Designs Limited, Cord House, The Causeway, Staines, Middlesex TW18 3AX.

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SYSTEMS SUPPORT

Bristol Office
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Can you support a sales success story like ours in Bristol?

We are being particularly successful with the sales of our wide range of products to the end user market, notably in CAE, office automation and networking systems.

This success demands a major increase in our systems engineering support. This is where you come in.

If you are aged 25+, have at least 2 years' systems software support experience, either with a user or a computer systems manufacturer, thrive in a competitive market environment; yet find that your present company lacks a certain cutting edge, then we need you now, particularly if you have specialist experience in:

* Integrated Office Systems
* Computer Aided Engineering
* Networking
* Data Bases

We want people to match our product growth and market penetration in these areas.

Initial training includes product familiarisation in the United States.

Besides an initial salary which is negotiable £9,000 -£14,000 + car, there is a bonus scheme.

As we said, Data General in Bristol is buzzing. Join our hive of activity and redefine your career with the company that delivers tomorrow's technology.

Send your c.v. or write or telephone for an application form to: Gina Richards, Personnel Officer, Data General Limited, Hounslow House, 724-734 London Road, Hounslow, Middlesex TW13 1PD. Tel: 01-572 7455.

The new MV/10,000 is the most powerful computer in Data General's Eclipse family. It is the fastest and best price/performance virtual memory 32-bit computer on the market.

Data General
a Generation ahead

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Bushey, Hertfordshire

IBM 4331 OS/VS1 CICS COBOL

Systems Programmer *to £14,500*

The above machine will shortly be installed at Rank Xerox, Bushey. It will be used for the development and support of systems for use in Rank Xerox Operating Companies in several countries.

An experienced person, ideally with OS/VS1/CICS and a good working knowledge of IBM telecommunication protocols, is required as the sole systems programmer for this machine.

He or she will have additional responsibilities, such as support to application development groups and the use of microcomputers linked to mainframes. Infrequent overseas travel may be required.

Analyst/Programmers *£11 - 13,000*

Several major systems are being developed and supported by expanding project groups at Rank Xerox, Bushey.

These systems, embracing service, administration, financial and marketing applications are in use in several Rank Xerox Operating Companies around the world.

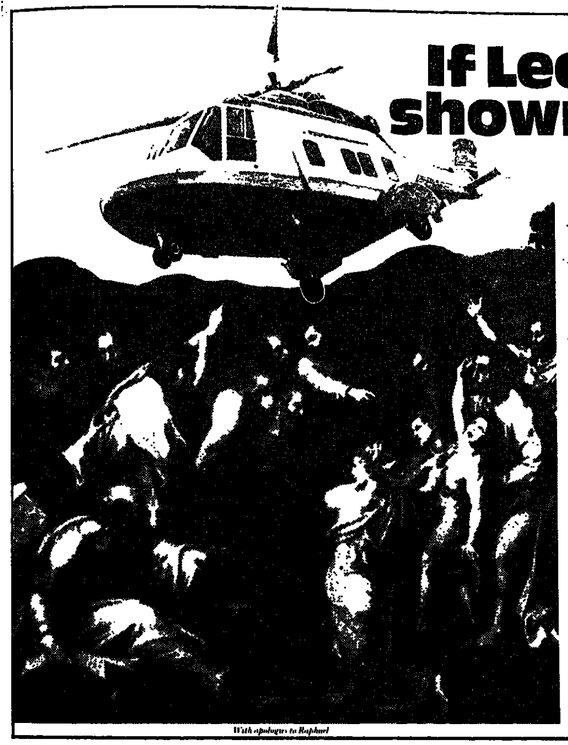
We are looking for people who have 3 years solid COBOL and who are seeking an opportunity to develop their knowledge of CICS on-line processing techniques.

These positions will suit mature and ambitious individuals who will enjoy variety and challenge with occasional overseas travel.

The work environment is extremely modern and comfortable, and the above positions carry excellent fringe benefits including BUPA. Generous relocation assistance to this pleasant location in the green-belt of Hertfordshire will be provided where appropriate

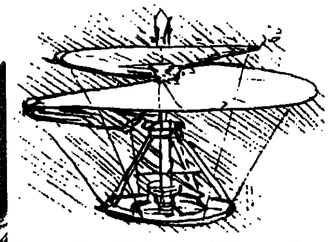
For full information and an interview, telephone Digby Dyke:
0905 611512 *office hours, or*
06845 2210 *evenings and weekends*
or write to him with details of your career to the address below.

Computer Personnel & Executive Development Associates Limited
11 Gillingham Street, London, SW1V 1HN.



With apologies to Raphael

If Leonardo da Vinci had shown his ideas to CASE...



Leonardo kept his drawings of flying machines secret, knowing they wouldn't be understood. If he had been able to show them to CASE, we wouldn't have had to wait until 1939 for the first successful helicopter flight.

Our technological understanding and commitment to an adventurous programme of Data Communications research and development, has already meant that we're producing ideas ahead of our time. More daring than most companies, we allocate large capital budgets to new development projects and, we provide our Development Staff with all the resources they need to develop original, inventive, even revolutionary ideas.

Our less formal, less hierarchical company structure means we avoid unnecessary bureaucracy. Our working environment encourages creativity and our R & D Managers are approachable and open to new ideas. The outstanding success of our products and the career progress achieved by our Development Staff, proves that we've created an atmosphere in which everyone works at their best.

Is this the sort of environment you've been looking for?

We're now seeking
Systems Designers,
Systems Engineers and Programmers,
Real Time Programmers,
Signal Processing Engineers,
PCB Designers and
Mechanical Designers, to join our Communications Product Development teams at various levels in the following specialisations:

- **Mainframe Protocols**
- **Statistical Multiplexing**
- **Networks, Wide and Local**
- **Communications Processors**
- **Network Management Systems**
- **Real Time, Multi-Tasking Software**
- **Message Switching/Mail Systems**
- **Digital Signal Processing - Modems**
- **Communications Protocols X25, PAD, X121**

The starting salaries offered will be up to £18,000 p.a. depending on the extent and relevance of your experience and qualifications, plus relocation assistance where appropriate.

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CASE

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To organise and run a small service & repair centre. Must have exp in analogue & digital electronics to work under min supervision. Co's main activities are in Computer Peripheral equipment.

SENIOR SOFTWARE ENGINEER to £12,000
A graduate with a min of 3 yrs exp gained on minicomputers, with a good knowledge of language design/operating systems. Assembler programming exp. and knowledge of at least one high level language req'd

PERIPHERALS SPECIALIST to £7,000
An opportunity exists in this expanding Co. to assume a responsible position. Activities include Computer Peripherals & associated Hardware in World Data Processing areas. Technical knowledge of Printers, Terminals and Data Comms reqd.

Will interested applicants please send a CV or telephone for further information on Burnham (06286) 3311 and ask for Jane Young. 198 High St, Burnham, BUCKS. SL1 7JD

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C. LONDON
to £12,000

Are YOU looking for a challenging position that can offer you real career prospects? Major expansion of this progressive company, based in Central London, has led to vacancies for Programmers with a minimum of ONE YEAR'S experience. Our client retains large IBM MAINFRAMES using PL/1, CICS and DL/1, and has recently embarked on a large SYSTEMS DEVELOPMENT programme.

Company offers:

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1984 OPPORTUNITIES

WEST MIDDLESEX/BERKS BORDERS **£12,000**
IMB SYSTEM 34/38 DEVELOPMENTS
An extensive program of RPGII and RPGIII projects are currently scheduled with our client a well-known commercial organisation. They seek to recruit programmers to perform both programming and analysis liaising closely with the User area. Applicants should offer at least eighteen months programming in either language and RPGII candidates will be offered RPGIII training. Ref: A1

EAST BERKSHIRE **£9,500-£11,000**
IBM BASED PROJECTS – ANALYSTS & PROGRAMMERS
COBOL, CICS, DL1 projects are currently being developed by our client located in a very accessible part of Berkshire. They are seeking Systems Analysts with around two years' experience of Analysis ideally together with a programming background, and programmers with at least two years COBOL for whom CICS and DL1 training will be available, and project work will cover a wide range of commercial/financial systems. Ref: A2

CITY **TO £10,000 + BENEFITS**
RPGII/III – BANKING
International Banking systems provide constant challenge and interest in terms of computer systems development and our client is no exception. With systems already using RPGII on System 34 they are planning for the development of SYSTEM 38 RPGIII systems. If you can offer around eighteen months RPGII or RPGIII programming experience you can expect to develop your career towards system design and analysis. Ref. A3

NORTH KENT **£7,000-£13,000**
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A leading Consumer Products Manufacturer is now embarking upon a range of new commercial developments in COBOL on ICL 2900 VME systems using on-line and database software. They now wish to recruit programmers with at least two years ICL COBOL to be fully involved in these challenging developments, where there will be appointments to work with Users. Ref: A4

To apply for these positions either write or telephone DP Selection Services quoting the appropriate reference.

01-434 2042
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7 Swallow Street, London W1R 7HD
"We look forward to hearing from you."
(6448)

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Our Client, a major UK and International Software Company, has recognised this since the early 60's and embarked upon a deliberate policy of developing computer based management tools to meet essential requirements of organisations dealing with human resources. Their specialised software products are unequalled in their performance and ability to meet each customer's precise requirements, and have been designed to provide a complete human resources management package.

As a result of their continued success and planned growth, we have been retained to recruit a Sales Executive to be based in the Midlands, to become part of our Client's positively directed and well supported sales team. The geographic area to be covered is the Midlands and Scotland, where your brief will be to sell extensions to their large installed client base and prospect for new business.

Candidates to be considered for this exceptional position must have a proven sales track record to date, be capable of negotiating at Senior Management level, combined with a background in Systems or Programming preferably gained in an IBM environment. Our Client's policy of internal promotion, creates many career opportunities, both in the UK and Overseas.

CTA RECRUITMENT CONSULTANTS attracts the best!

For an immediate confidential interview where you will be supplied with full company information, contact Richard Champion on 021 236 1999 (24 hour answering service) or 0562 884166 (evenings & weekends).

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73161

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- Analyst Programmers
- Network Consultants
- Systems Architects
- $30,000 to $65,000 (see scales below) – equates to £21,000 to £46,500 p.a.

Analyst Programmers — **$35,750 to $41,500 p.a.**

Mandatory skills:
- 3-5 years experience
- OS/MVS
- On-line systems
- Assembler

Also, for some positions, one or more of:
CICS, TCAM, SDLC, BISYNC, ACF/NCP, 3705.

Ideal applicants will have experience of a large installation, strongly developed analytical skills, and good powers of communication. Experience of a disciplined approach to standards and project planning is important – our Client uses 'Project Life Cycle' methodology. The work comprises the development of a new communications system using state-of-the-art technology.

Communications Analysts & Consultants — **$39,000 to $47,500 p.a.**

Mandatory skills:
- Voice and/or data networking
- Optimiser techniques
- Analysis skills
- Good communicator

Also, for some positions, one or more of:
Network design, network project co-ordination, analysis and design of comms systems.

Systems Architects — **$52,000 to $65,000 p.a.**

Mandatory skills:
- 8+ years experience
- Voice and data network technology
- Multiple project scheduling & control
- Independent research experience
- Good analytical skills

For most senior positions:
- 12+ years experience
- Appreciation of state-of-the-art voice & data hardware & software
- Technical management experience

Systems Architects and Communications Analysts and Consultants are required to work on the project in our Client's large network engineering division – a dynamic, high-technology environment. All applicants must be able to demonstrate a strong networking background to qualify for these medium – to senior-level positions.

The Project

Our Client is the world's largest brokerage company, based in the financial quarter of Manhattan. They are developing an ambitious, advanced networked communications system for their worldwide operations, capitalising on the latest developments in technology, including satellites, fibre-optics and voice and data transmission.

With an initial assignment period of 12 months, all these positions carry the potential for promotion and for long-term career development within our Client's organisation.

Our Package

Our New York office is located very close to our Client's site, providing on-the-spot support and assistance to all personnel assigned to the project. We have over six years' experience of resourcing projects in New York, and understand how to help new arrivals settle in with minimum disruption. Our relocation package provides full family airfares, relocation allowance, medical insurance, sick pay; it also arranges accommodation, banking facilities car transport (if appropriate) and practical assistance in settling in.

Action

These are superb opportunities for suitably qualified people to work on the latest telecommunications sytems and to enjoy the experience of the American way of life. Screening interviews are currently being scheduled in London, Birmingham and Manchester, and our Client will conduct selection interviews in London from 11th February, 1984. **Phone Mary Coleman today on 01-836 8411, or send your C.V. to her at Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS. Alternatively, mail the coupon.**

TO: FREEPOST, VLI HOUSE, ST MARTIN'S LANE, LONDON WC2N 4BR

Name..... Address..... Tel (work)..... Tel (home).....

VLI Computer People International

01-836 8411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS 01-680 4012 Computer People South, 27 George Street, Croydon CR0 1LB
021-643 8301 Computer People Midlands, Alpha Tower, Birmingham B1 1TT 061-491 1646 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA 01-836 8411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS
01-836 8411 Cobbseeker, VLI House, 68-69 St Martin's Lane, London WC2N 4JS 021-643 8732 Sales People, Alpha Tower, Birmingham B1 1TT also offices in New York, Kentucky and Los Angeles

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Unequalled in its range of job opportunities

BRITISH AEROSPACE

Systems Programmers

British Aerospace Aircraft Group has vacancies for experienced Systems Programmers to work on the development and maintenance of MVS and associated systems software for the 12 Mb. IBM. 3032 at our Filton site. One of these vacancies is a senior appointment for a team leader.

We would like to hear from you if you have at least two years' experience in some or all of the following:–

Systems Generation · System Maintenance (SMP)
JES 2 · TSO · Assembler · VTAM · HSM
Programme Product Implementation

We provide an extensive TSO network, centred on Filton, for the whole of the Weybridge-Bristol Division, with links to installations at Weybridge and other sites.

Conditions of employment include a first-class contributory pension scheme, free sick pay and life insurance and excellent welfare, social and sports facilities.

Please telephone or write for an application form to:–

(7278)

Employment Manager (Ref: AIR/2).
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Tel: Bristol 693831
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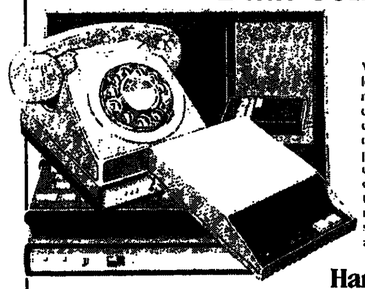
SALES & SUPPORT SPECIALISTS

Is your career as advanced as our Data Communications Products?



Many organisations claim to be at the forefront of modern technology, but few can match the advanced range of sophisticated communications products marketed by our client. As a young, but already well established and respected company, with a product range including modems, personal computers, viewdata software packages and communications networks, they are poised to make further inroads into the marketplace. Additional sales and support specialists are now needed to maintain the already considerable momentum.

Regional Sales Executives (2)

North of England
& Midlands/West based
£13,000 + Bonus + Car

These two opportunities offer the rare challenge and increased scope of selling the complete product range to our Dealer Network and Distributors. Proven sales experience in a DP related field, together with ambition and drive, are essential requirements in order to expand your future career prospects with a young, progressive and successful company.

Hardware Support Specialists (2)
Software Support Specialists (2)

London based £10,000

Essentially office based, you'll have the technical knowledge sufficient to answer queries from both Dealers and End Users in one of four areas: CPM based micro hardware or CPM micro software at a small business systems level; data communications and modem products, data communications software. Additionally, you would be expected to help provide a technical training to Dealers and their sales staff.

For further details and early interview call Noel Price on 01-278 6426, or 01-286 9141 (7pm-11pm) or write to him with full CV to: ACSIS Inc., 37-39 Bowling Green Lane, London, EC1R 0BJ.

ACSIS

Real Time Communications

S-COM is an expanding software and systems house specialising in true Real-Time applications. Our client list is extensive and includes many major international companies.
A number of vacancies have arisen for both Freelance and Permanent staff including a project for one of our major clients, based on the South Coast, to design and develop a new communications product. Suitable applicants should possess a degree or similar qualifications. A good knowledge of Assembler and at least one high level block structured language together with relevant experience in any of the following communications environments:–

- **Telephony, Message Switching**
- **Operating Systems, Telex**
- **Packet Switching**
- **General Automation Minis**

Where a project is remote from Aylesbury, subsistence payments are often payable in addition to salary or fees.

	Permanent	Freelance
Senior Software Designers 7-8 years relevant experience	**To £16K p.a.**	**£525 p.w.**
Senior Programmers/Designers 4-5 years relevant experience	**To £11.5K p.a.**	**£470 p.w.**

For further details contact Lawrence Mills or write enclosing a full CV.

S·COM **Computer Systems Engineers Limited**

Tower House, High Street, Aylesbury, Bucks. Tel: 0296 32023
Evenings after 7pm or weekends: 0296 33059

URGENT Due to illness we have an immediate requirement for a VAX FORTRAN Software Engineer. (7339)

MVS SPECIALISTS for SYSTEMS SOFTWARE DEVELOPMENT & SUPPORT

Surrey **to £20K + car**

MACRO 4 has been originating and marketing systems software to DOS(VSE) users with great success since 1968. We have our own 4341 dedicated to development and support of our products, which are marketed worldwide.

We are now entering the MVS market and require several experienced MVS Software Specialists to work initially on conversion and/or support of existing products, and subsequently on new products.

Prerequisites are a thorough knowledge of MVS structure (internals knowledge would be an advantage), ability to write Assembler and a high level of self motivation.

In return we offer an excellent salary, non-contributory pension scheme, free BUPA membership plus the normal range of benefits associated with a successful company.

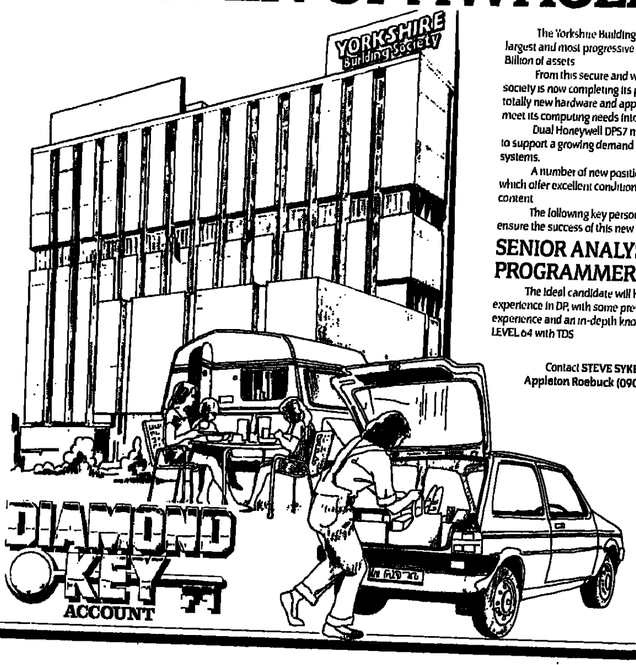
Write or phone Phil Heseltine or Terry Kelly at

Macro 4 Ltd, River House, Restmor Way, Wallington, Surrey. Tel: 01-669 0011

(7294)

M MACRO 4 LTD.

GET THE KEY TO YOUR FUTURE AND OPEN UP A WHOLE NEW LIFESTYLE.



The Yorkshire Building Society is one of the UK's largest and most progressive Building Society's with over £1 Billion of assets

From this secure and well established base the society is now completing its plans for the introduction of totally new hardware and application systems designed to meet its computing needs into the 1990's

Dual Honeywell DPS7 mainframes will be installed to support a growing demand for on-line and real-time systems.

A number of new positions have been generated which offer excellent conditions, progression and technical content

The following key personnel are now required to ensure the success of this new venture.

SENIOR ANALYST/ PROGRAMMER c£11,000

The ideal candidate will have at least 4-5 years experience in DP, with some previous supervisory experience and an in-depth knowledge of COBOL, DPS7 or LEVEL 64 with TDS

ANALYST/PROGRAMMER c£8,500

We are seeking 2 bright Analyst/Programmers with a minimum of 2-3 years experience in DP, and in-depth knowledge of COBOL preferably on DPS7 or LEVEL 64 with TDS. Candidates with experience in a similar environment will also be considered for these posts

This is a rare opportunity for top calibre people to join a large, successful and expanding organisation at the outset of this major development. The jobs are stimulating and challenging as you will be working with "State of the Art" hardware and software and there are ample opportunities for progression as the department grows

Head Office is located in the centre of Bradford, within easy reach of the Yorkshire Dales and attractive and reasonably priced housing areas.

This progressive financial installation offers very attractive salaries plus concessionary mortgages, the usual large company benefits and excellent working conditions Relocation costs will be paid where appropriate

Contact **STEVE SYKES** or **JOHN MASON** on **Leeds (0532) 455911** during office hours or **STEVE SYKES** on **Appleton Roebuck (090484) 350** evenings and weekends, or write to the address below with brief career details

Lorien
COMPUTER SERVICES LTD.
We've got it!

Recruitment Consultants, OCS House, Servia Road, Leeds LS7 1NJ

(7381)

SPECIALISTS IN COMPUTER CAREERS

SUPPORT THE PC!
and earn up to £16K

Currently we are undertaking recruitment of support staff on behalf of IBM PC dealers and software houses nationwide. The enormous demand for the 'PC' micro and the stringent standards of user support set by IBM for its appointed dealers means that there has never been a better time to move into this exciting business area.
We are urgently seeking enthusiastic and user-oriented professionals within the following categories:

APPLICATIONS SUPPORT — **Programmers/Analysts**

with micro programming and/or design experience, awareness of the business software market and ability to implement both packaged and bespoke applications software.

TECHNICAL SUPPORT — **Systems/Software or Application Programmers**

with knowledge of micro hardware, op. systems and comms/networking or background in IBM mainframe op. systems and recent involvement in micros.

SALES — **Experienced Salespeople**

with sound track records in related product areas can achieve £30,000 OTE. Specialist 'vertical market' knowledge (e.g. accounts, legal, medical, etc.) is of particular interest.

TRAINEE PRE/POST SALES SUPPORT — **Graduates**

Good degree computer involvement blessed to business applications. Outgoing personality, able to deal confidently and sympathetically with PC users at all levels.

Remember, the IBM PC and derivatives have behind them the huge development resources of IBM itself. IBM micro systems are here to stay, prospects are superb and NOW is the time to secure your future.

Call **JOHN GRAHAM** to discuss your situation or send your c.v. to the address below. (Evening/weekends please ring 06285 21922).

(7374)

Conquest RECRUITMENT
Conquest Computers Ltd
93 Whitby Road
Slough
Berkshire
(0753) 821644

SALES SUPERSTARS

£35K

+ AUDI QUATTRO
LONDON AND WESTERN HOME COUNTIES

Sell an outstanding range of Micros through Minis to Superminis. Compatible with most large systems plus some of the best applications software yet designed.

Opportunities exist in both vertical market and major accounts areas.

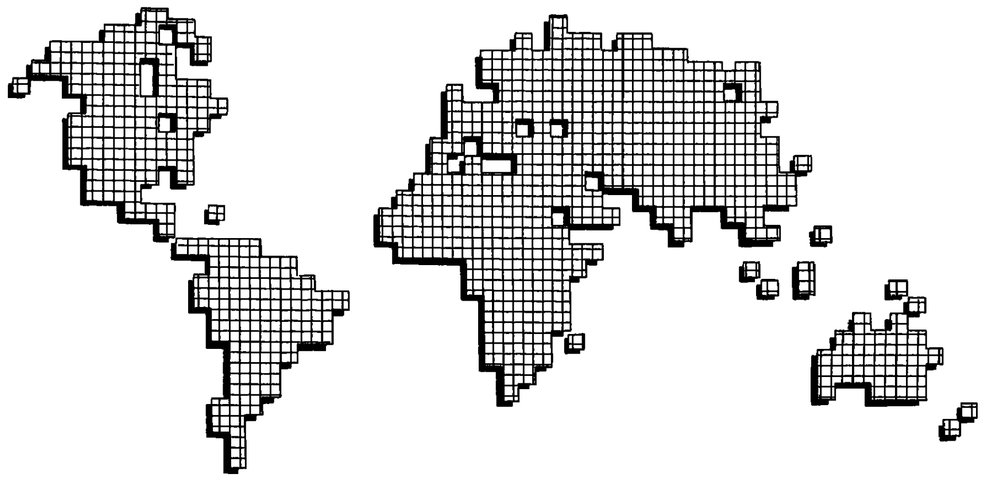
Your success will guarantee you rapid management progression offering even higher rewards.

Just prove to us that you can really sell computer systems and have the ambition, commitment and energy to take you to the top.

Contact Carol Bowden quoting Ref. 7496

(7354)

Lloyd Chapman Associates
123 New Bond Street, London W1Y 0HR 01-499 7761



DALROTH

the international recruitment consultancy

ROGER ALLINGTON
Principal

JENNIFER DALRYMPLE-HAY
Principal

IAN MURRAY WEST
Senior Consultant

PETER HENRICK
Consultant

Welcome to 1984 with Dalroth entering its fourth year; not that we are really that young because Dalroth is the result of merging OCC Contracts and William Key & Partners, two well-respected and long-established computer recruitment specialists.

During 1983 we expanded not only in the U.K. but in the U.S.A. and the Middle East and offer a professional and personnel recruitment consultancy service based on years of experience in the industry we have grown up with.

History has proved that "today's applicants are tomorrow's clients".

The brief details, on the centre fold, of jobs available in the U.K., Europe, U.S.A. and the Middle East indicate the breadth and scope of our activities. They represent only a selected extract from our current requirements file.

Should you wish to be considered for any of these or similar positions, or be interested in making a general enquiry please make use of the freepost application form provided on the back, or telephone any of us for further information.

Alternatively if you are a client please do not hesitate to contact any one of us to discuss your requirements.

هكذا من الأصل

DALROTH & PARTNERS LTD • 4 HALF MOON STREET • LONDON W1Y 7RA • Tel. 01-493 2947

(7261)

DALROTH

(11)
UNIX and "C"
IMAGE Processing Software Development – Surrey
Automated Warehousing Development – West London
Systems Software INTERNALS – Oxford
New Graphics Package Development – Central London
Industrial Automation New Project – Central London
Applications Package Development – New York U.S.A.
Message Switching Design and Development – East Coast U.S.A.
Programmers and Analyst Programmers for a variety of High Tech Development Projects.

(29)
U.S.A.
MAJOR NETWORKING PROJECT – EAST COAST
Development and implementation of Packet Switching Networking system for Airline utilization. Designers and programmers with Assembler backgrounds and knowledge of Protocols, Message Handling and Distribution required. Permanent positions.
IMSA – MVS SYSTEMS PROGRAMMERS – WEST COAST
Various Contract positions.
AVIONICS – WEST COAST
Design and Development Engineers with Degrees. For Avionics Manufacturing company. Permanent or minimum 2 years contracts.
TELECOMMUNICATIONS DEVELOPMENT DIRECTOR – EAST COAST
To build and steer the future activities of a well established communications group.

(24)
OPERATING SYSTEM – I/O DRIVER SPECIALIST
Midlands and South – £10-£14k
To work on Design and Implementation of Systems for New Hardware Configurations Particularly 16 Bit Micro driver Special Systems.

(25)
R & D PROJECTS DEVELOPMENT
South Coast – £10K-£20K
Communications – Traffic Automation – Signalling Control. Programmers, Designers and Project Managers to work in multi-disciplinary teams on the Hardware and Software Design of products for the next decade.

(26)
INFORMATION SYSTEMS
LONDON/MIDLANDS £15-£20K
CONSULTANT MANAGERS/IMPLEMENTATION ASSURANCE EXPERTS
To work on very large Distributed Data Systems from feasibility through Specification to implementation and Client Integration.

(27)
DATABASE DESIGNERS AND MANAGERS
U.K. £15-£20K – M.E. to £30K
London – Home Counties – M.E.
For the Design of Data Base Packages and Special Systems, and the Design of Users Systems, including implementation and Data Base Management.
Experienced ANALYSTS and PROGRAMMERS also required.

(22)
SCIENTIFIC/TECHNICAL PROGRAMMERS/DESIGNERS
£7K-£14K
MIDLANDS – HOME COUNTIES – SOUTH
Technical Project experience using PASCAL, FORTRAN, 'C' or Assemblers on Mini or Micro Hardware, ideally with Real-time, Network or Special Hardware adaption backgrounds.

(28)
FINANCIAL SYSTEMS
BANKING – BROKERAGE – INSURANCE – BUILDING SOCIETY
MAINLY LONDON BASED £12K-£18K
Project Leaders, Analysts and Programmers for Major Consultancy Projects to work on development and implementation phases. For Senior positions – prior relevant experience is essential for Junior position sound Structured Analysis/Programming in COBOL is required.

(14)
PROJECT MANAGEMENT SUPPORT CONSULTANT
£16k-£20K
London, Midlands and Southern England
To provide Support and Control for Large Multi Disciplined Projects
Must have a minimum 10 years DP with experience in several of the following:
Project-Planning, Scheduling and Control; Data Dictionary; Data Base; with an understanding of (Structured) Development and Structural Analyses Methods.

(15)
ACCOUNT MANAGER – Central London
to £20K + car and Bonus
Responsible for all Accounts, within a Technical Development Group; through all phases of development; to Support Sales and Marketing and to have total Q.A. and Bottom-line responsibilities.

(10)
MINI APPLICATIONS DEVELOPMENT
VS 2200 Ass. Programmers – West London
HP 3000 Designer Programmers – London, Manchester, Aberdeen
TANDEM TAL PROGRAMMERS – London, Sheffield and Home Counties
PDP11 and VAX Programmers with MACRO, BASIC, FORTRAN or 'C' – London/Surrey

(12)
SALES
IBM SYSTEM SOFTWARE PRODUCTS SALES
IBM background essential London, Home Counties and West Country
BANKING & FINANCIAL SYSTEMS
Senior Sales Consultants with Mature backgrounds – London based
FINANCIAL SYSTEMS AREA
Hardware Sales and Systems Support – Closed
HARDWARE SALES
Peripheral, Data Communications Equipment, Mini/Micro Hardware front line Sales Executives – London, South and West

(21)
GRADUATES – POSTGRADUATES
£6K-£9K
Good Honours degrees in Computer Science, Maths, Physics or Engineering with Major Computer Bias. Also Electrical Electronic Engineering with large Hardware Design Emphasis are needed in all areas of the country but particularly the South. Up to 2 years employment experience and willingness to travel an advantage.

(6)
U.A.E., DAHRAN, SAUDI ARABIA
IBM DOS/VSE Environment
For Government, Commercial, Oil and Airline Companies.
Ops Support Supervisor
Systems Programmers – O.S and TP
Analyst Programmers – CICS/COBOL
Contract and Permanent positions
TAX FREE Salaries, and housing and benefits.

(1)
BURROUGHS MEDIUM DISTRIBUTORS
Sales/Marketing Manager
Senior Salesmen
Hardware/Software Engineers
Field Maintenance Engineers
Very good Middle East conditions, Salaries TAX free, good bonus and commission scheme.

(16)
TOOLS TO BUILD TOOLS!!
£16K-£18K Central London
Define the Mechanisms and Tools for the NEXT Generation of Software Design and Development.

(17)
INDUSTRIAL AUTOMATION – U.K.
PROGRAMMERS TO SENIOR DESIGNERS
£10K-£18k

PLANT CONTROL	warehousing – process control – supervisory control systems;
DISTRIBUTOR CONTROL	networks, automated retailing, BT PSS facilities
SOFTWARE TECHNOLOGY	Communicates and interfaces.

(8)
LONDON – MIDLANDS – SOUTH
ICL 2900 or ME29
IDMS or TPMS Analyst Programmers
All experience levels – Permanent positions
ICL 1900 G III
Programmers and Analysts
Various of Commercial Installations

(9)
U.K.
ICL SYSTEM 10/25
Programmers and Analysts
For new and ongoing projects
System Software Programmers
For development work

(18)
M.O.D. AND C3 – U.K.
All levels of Development Staff required – £8K-£18k
Command and Control – Avionics – Space/satellite Communications – Message Switching Distribution and Control.
The Design and Development of Robust and Secure Defence and Civil Control Systems.

(13)
IBM SYSTEMS PROGRAMMERS AND S.E.s

VM, CMS or SP	London and S.E. to c £16.5K
MVS or DOS VSE with CICS – fluent Assembler essential	London + 50 mile radius up to 16K + car + benefits
MVS JES 2 or 3 TSO VTAM	London, Saudi, Germany and Italy
DOS/VSE New Installations	London, also Saudi and Germany
CICS/DL1 Support Specialist	London
ACF, VTAM, NCP TP Systems specialists	London, Saudi and Italy
MVS and IMS – Contract	Southern Germany

(2)
SAUDI ARABIA – U.A.E.
H.P. 3000 – Distributed Networked Warehousing and Logistics System – New Project
D.B.A.
Senior Analyst – Analyst Programmers + complete Support Team including:
Support Manager
Operations Manager and Operations staff.
Above average package, short term Programming Contracts also available, starting March/April.

(3)
OMAN, QUATAR, BAHRAIN AND SAUDI ARABIA
WANG
For Government and Commercial users and Main Distributors
Product Development Manager
Systems Engineers
Salesmen and Support Staff

(23)
COMPILER – LANGUAGE SPECIALIST
LONDON THAMES VALLEY – TO £16K
Designers and Programmers with language Design, Optimisation and Implementation experience particularly related to 16 Bit Systems using Firmware Modules.

(19)
HOLLAND
MINI/MICRO Real-time Assembler and/or PASCAL Designer and Analyst Programmers for Process Control, Message Switching and Communications Systems. Permanent position.
VIDEO GAMES Designers, both Hardware and Software 6 months renewable contract. Rate negotiable.
System 38 RPGIII Commercial Programmer 55 DFL/hr 6 months renewable contracts – Central Holland.
IBM – Copics – Analysts and Programmers.

(20)
GERMANY and ITALY

RPG MAAPICS Programmers	1 year Contract – Germany
IBM Assembler CICS Applications Programmer	Central Germany Permanent or Contract
Italian speaking COBOL Programmer	Northern Italy (Training given for Italian National to convert to IBM)
MVS, VTAM Systems Specialists.	Germany and Florence

(5)
MIDDLE EAST
IBM – MVS Environments
Business Analyst – PL/1 background
Analyst/Programmers PL/1 or COBOL
Systems Programmers – O.S. and TP
Analyst – INTERPERS Specialists
Ops Support Manager
Operations Staff
Training Specialists
TAX FREE Salaries and usual Benefits

(7)
SAUDI ARABIA
DEC PDP and VAX, SYSTIME and DEC 10
Government Institution, Systems House and Main Dealership
Banking Financial Analysts
Systems Analyst – preferable Arabic speaking
DEC10 Internals TOPS 10/20 Software Specialists
Programmers
Sales/Marketing Personnel
Operations Manager
Good Middle East TAX FREE package, some married status, villa accommodation etc.

(4)
SAUDI ARABIA
PRIME
Large Multi CPU Industrial Installation
Business and Systems Analysts
Analyst/Programmers – COBOL
Very generous Tax free package
Excellent Accommodation
Married Status Appointments
Permanent and long term contracts

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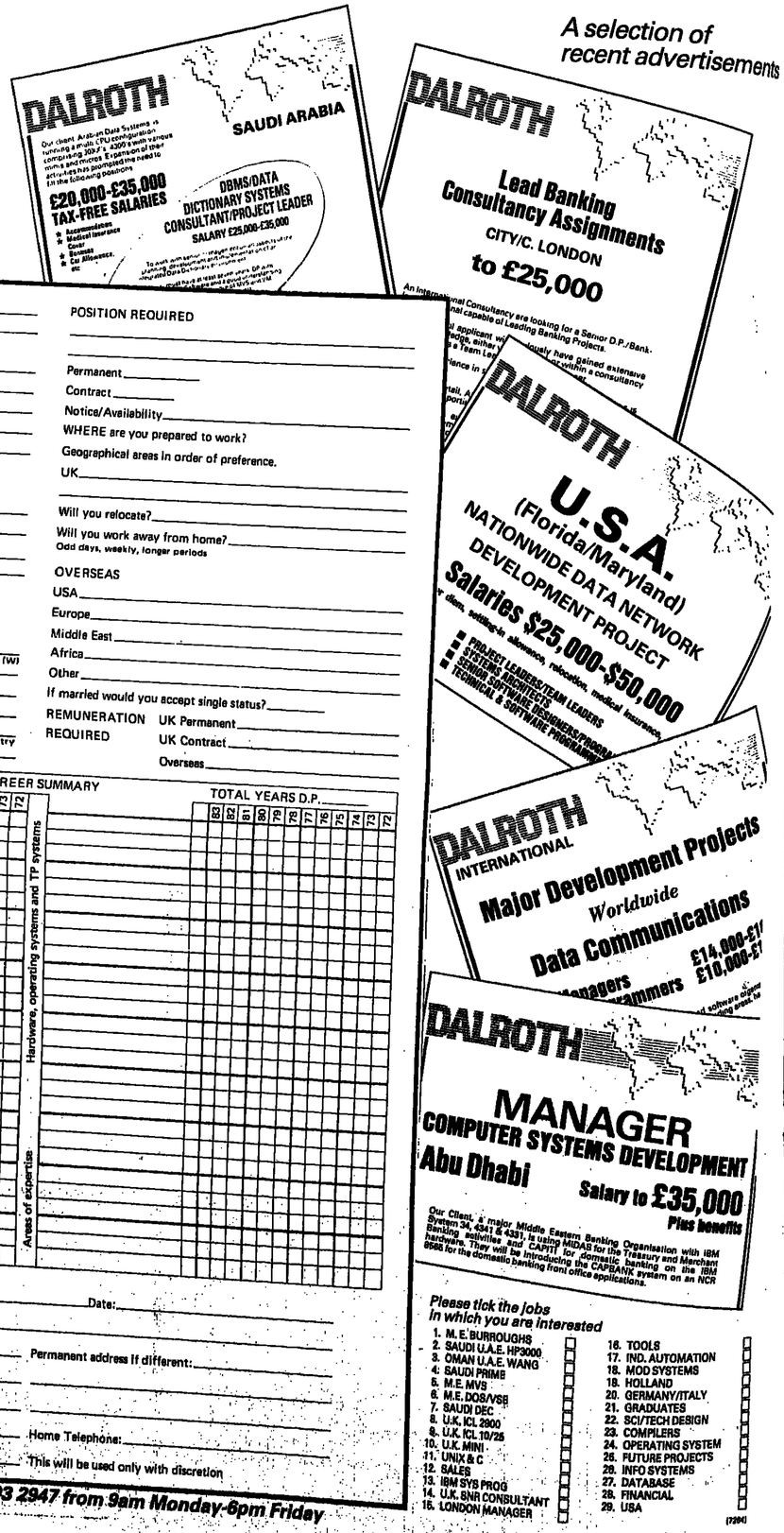
DALROTH

Fill in this form NOW and send it to —

DALROTH & Partners Ltd
FREEPOST 4
LONDON W1E 8UZ

Enclose your cv if you have one

A selection of recent advertisements



SURNAME _____ Mr. Mrs. Miss
FORENAMES _____ Underline name known by
AGE _____
MARITAL STATUS _____
No. of children and ages _____
NATIONALITY, At Birth _____
Now _____
Valid Passport _____
Do you require a UK work permit? _____
HIGHEST ACADEMIC _____
QUALIFICATION _____ Number of O's, A's, Diplomas, Degrees and Principal Subject
Membership of _____
Professional Bodies _____
House Owner _____
Car Owner _____
Current Driving Licence _____
FOREIGN LANGUAGES _____ State Slight, Moderate, Fluent — Spoken (S), Written (W)
Current Geographical Location _____
Current Salary _____ County or Country

POSITION REQUIRED _____
Permanent _____
Contract _____
Notice/Availability _____
WHERE are you prepared to work?
Geographical areas in order of preference.
UK _____
Will you relocate? _____
Will you work away from home? _____ Odd days, weekly, longer periods
OVERSEAS
USA _____
Europe _____
Middle East _____
Africa _____
Other _____
If married would you accept single status? _____
REMUNERATION REQUIRED
UK Permanent _____
UK Contract _____
Overseas _____

CAREER SUMMARY — TOTAL YEARS D.P. _____

Position/Jobs held	83	82	81	80	79	78	77	76	75	74	73	72
Languages												
Data Bases and Packages												
Hardware, operating systems and TP systems												
Areas of expertise												

Signature: _____
Date of Birth: _____ Date: _____
Present Address: _____
Permanent address if different: _____
Home Telephone: _____
Office Telephone: _____ This will be used only with discretion

Please tick the jobs in which you are interested

1. M. E. BURROUGHS
2. SAUDI U.A.E. HP3000
3. OMAN U.A.E. WANG
4. SAUDI PRIME
5. M.E. MVS
6. M.E. DOS/VSE
7. SAUDI DEC
8. U.K. ICL 2900
9. U.K. ICL 10/25
10. U.K. MINI
11. UNIX & C
12. SALES
13. IBM SYS PROG
14. U.K. SNR CONSULTANT
15. LONDON MANAGER
16. TOOLS
17. IND. AUTOMATION
18. MOD SYSTEMS
19. HOLLAND
20. GERMANY/ITALY
21. GRADUATES
22. SCI/TECH DESIGN
23. COMPILERS
24. OPERATING SYSTEM
25. FUTURE PROJECTS
26. INFO SYSTEMS
27. DATABASE
28. FINANCIAL
29. USA

(7304)

Of course you can phone us on 01-493 2947 from 9am Monday-6pm Friday

`Real Time' People Contract Opportunities

Learning valuable new skills on contract is now possible with some of our clients, providing your experience partly matches up with their requirements.

If you have any of the following skills you now have an opportunity to learn others in the list

- *VAX*
- *PDP*
- *CORAL*
- *ASSEMBLER*
- *MILITARY*
- *SCIENTIFIC*
- *TECHNICAL*
- *MINI*
- *PASCAL*
- *ALGOL*
- *RTLII*
- *MATHS*
- *GRAPHICS*
- *EXPERT*

A background incorporating any of the following is advantageous: Software Engineer, Programmer, Analyst/Programmer, Designer, Project Leader. Candidates on 4-8 week's notice acceptable.

Top rates will apply to applicants with all the necessary skills and experience.

For further information why not ring us at Computer People Midlands, Computer People London or Computer People South?

VLI Computer People

●01-836 8411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●01-680 4013 Computer People South, 27 George Street, Croydon CR0 1LB ●021-643 8501 Computer People Midlands, Alpha Tower, Birmingham B1 1TT ●061-491 1666 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA ●01-836 8411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ●01-836 8411 CoOperators, VLI House, 68-69 St Martin's Lane, London WC2N 4JS ● 021-643 8732 Sales People, Alpha Tower, Birmingham B1 1TT ● also offices in New York, Kentucky and Los Angeles

The Market Leaders (7324)

A CHALLENGE FOR THE FUTURE

Analyst/ Programmer

The new Fife Ethylene Plant in Fife, Scotland, is scheduled for start up in 1985. The Plant is in an attractive location within easy reach of Edinburgh. Designed to convert North Sea Gas to ethylene efficiently, this plant represents an investment of over £400 million and it will rely heavily on up to date computer systems.
As part of the planned build up of staff we are seeking a graduate with up to 3 years computing experience to join our Information Systems Department. This is responsible for establishing a complete range of computing facilities to the plant from manufacturing information through plant maintenance to financial and electronic office systems.
Initial role will be in the manufacturing information area with later opportunities to move to other parts of the company as the career progresses. Early responsibility will be given to work closely with users to meet their computing requirements.
The department uses primarily an IBM 4341 and a Data General MV8000 computer. The IBM system is based on a powerful relational data base management language. Other systems are available through the company network.
Candidates should be in their mid twenties. Training relative to previous experience will be provided. It would be an advantage for candidates to have a chemical engineering or computing science background, but opportunities are by no means restricted to individuals with this experience.

Systems Programmer

We are also seeking a systems programmer to take responsibility for the operating system on the IBM 4341 and its relational data base management system. Primary responsibilities will include the start up of this system and the provision of consultancy services to the company's plant at Fawley, Southampton, and two other sites in Europe. In addition the successful applicant will take some responsibilities for the Data General System and for commissioning and maintaining interfaces in a multi vendor environment.
Candidates should be in their mid twenties. Ideally graduates with experience in a systems programmer role of IBM's VM operating system in a database applications environment. However, consideration will be given to those candidates who have experience working with other operating systems.

Candidates can expect a competitive salary and benefits package which includes a relocation allowance where applicable.

Interested parties, male or female, should telephone 0592 262826 or write for an application form and job description to:

P W Allnutt
Recruitment Co-ordinator
Esso Chemical Ltd
Carlyle House, Carlyle Road, Kirkcaldy, Fife

Esso CHEMICALS

Operators/ Senior Operators

Bournemouth
£6,500 - £9,000 Plus Benefits

Remuneration inclusive of Shift Allowance

Benefits include relocation package and mortgage subsidy (where applicable), non-contributory pension, free life assurance, subsidised restaurant, sports and social club and staff discount shop.

Requirements

Abbey Life has vacancies for Operators and Senior Operators with a minimum of 1 years experience of MVS/JES2 (VS1 would be considered). Knowledge of JCL and utilities would be an advantage but not essential.
5 'O' levels (including English and Maths) are also required.

The Company operates a 5 day, three shift system, currently under MVS/SP on twin IBM 3083 CPUs with ACF/VTAM, CICS/VS and ROSCOE.

Please write or telephone for an application form to:

Val Hastrop or Alison Davies,
S. & D.P. Technical Recruitment,
Abbey Life Assurance Company Ltd.,
80 Holdenhurst Road,
Bournemouth BH8 8AL.
Tel: (0202) 292373 ext. 4444.

Abbey Life (7325)

SMR

Sales & Marketing Recruiters Ltd

Leaders in High Technology Recruitment

SALES EXECUTIVES
or
SALES MANAGERS
ALMOST TOO GOOD TO BE TRUE?

That's what these 2 job opportunities appear to be at first sight! After all, how often is it that you come across the chance to join an undisputed leader in its chosen area of computing, with a totally original marketing concept and a completely unique product, yet a company that has been enjoying continuing success for the past 10 years?

This is a company where the salesman is king. Indeed, all the company directors have distinguished records of success in territory sales. Mind you, you have to be good! No matter how accomplished you are you will have to learn some new selling techniques and conceptions, which will necessitate extensive and continual training.

Summing up the total attractions of these jobs is difficult, other than to say the company offers a fruitful environment for excellent people to fully exploit their potential and truly enjoy their work. Here are a few more considerations:

* **Only one salesman has left this company in the last 10 years.**
* **There is constant exposure to the highest level of management in British industry.**
* **Every transaction is different.**
* **Their salesmen are involved in more deals in a month than a mini/mainframe salesman normally handles in a year.**
* **There is perpetual involvement in the most exciting aspect of selling.**
* **This product area automatically increases personal market value and business management skills.**
* **The company is dedicated to individual freedom of expression, flexibility of operation and excellence of performance.**

The jobs are located in

LONDON & NORTHERN ENGLAND

and will be best suited to those sales people who feel comfortable handling sales transactions of around £½ million; successful negotiators with a truly competitive nature and real flair for creative thinking. It will be a particularly attractive opportunity for those in sales management who would prefer to be doing deals instead of 'pratting around' with staff!

Expected earnings, other than sickness insurance and health assurance, include profit-sharing and a high basic salary, with a total remuneration of

OVER £30,000 + GRANADA GHIA (or equivalent)

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LSI Logic, a leader in the field of custom designed integrated circuits, requires an experienced Data Communications Technician to support its new European facility based in Bracknell town centre.

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Primary responsibilities consist of assisting the Regional Communications Manager with maintenance and installation of local and international networks.

We offer a competitive salary and an outstanding benefits package. Some travel may be required. Career prospects are exceptional.

For consideration of this position please send a full c.v. to:
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(7259)

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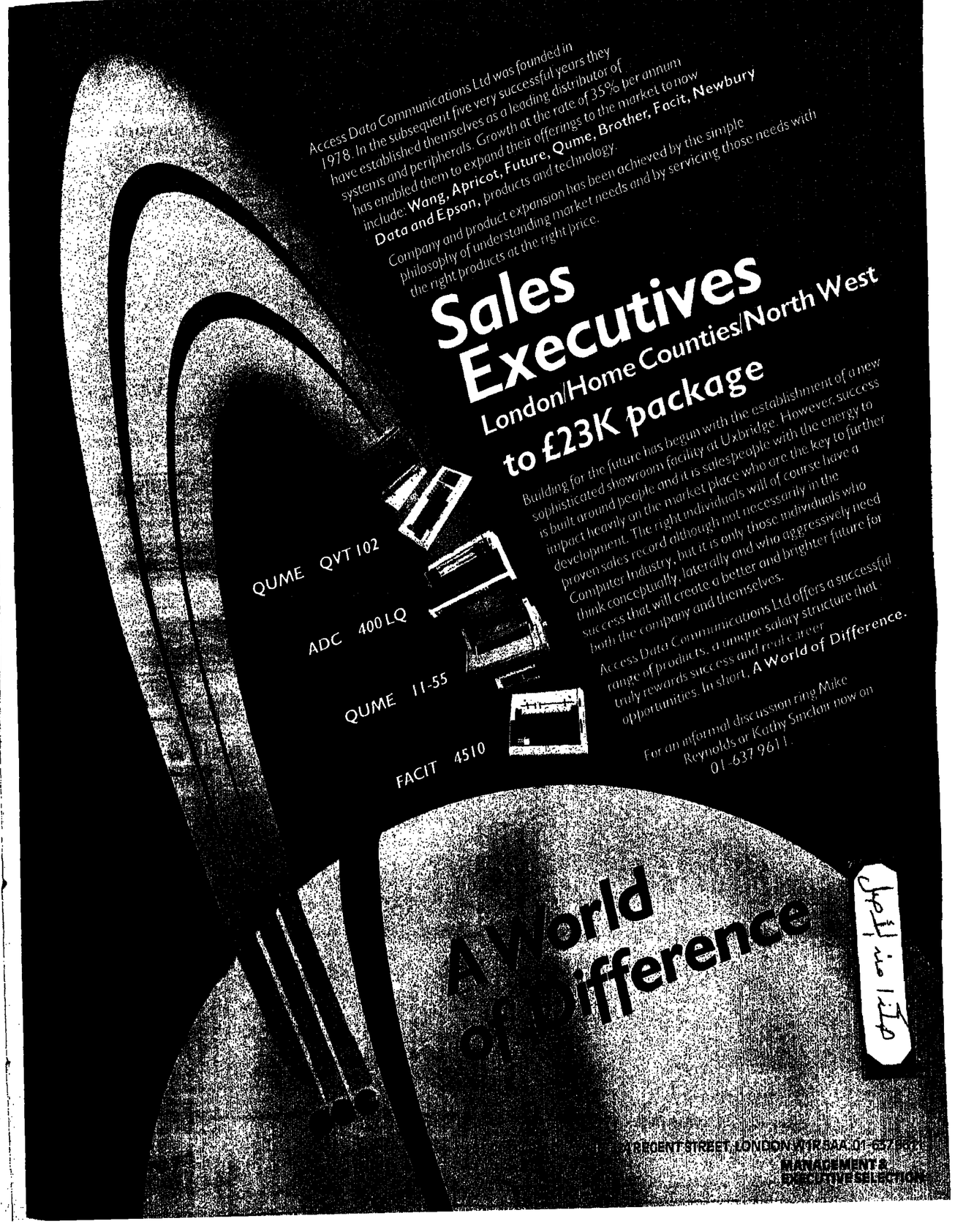

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CITY **£10-13,000**
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REF. M/W 4073

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This multi-national oil exploration organisation currently invite applications from systems programmers with a sound knowledge of D.G. equipment. Familiarity with A.O.S. operating system and INFOS is essential. In return they offer an interesting and stable working environment plus a good salary, regular reviews and career path.
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REF. E/W 4099

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REF. E/W 4097

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REF. G/W 6780

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REF. G/W 3970

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REF. G/W 1391

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REF. A/W 2954

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Successful applicants will initially assist in the development of this strategy and then participate in detail system design and implementation. To meet the demanding standards required you will need 7 to 10 years experience in Project Management and have worked with both mainframes and minis. You will also require good communication skills and the ability to work at all levels of management. Experience in the oil industry is obviously essential.

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LOCATION: LONDON JA339/1

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£ attractive

Our client is a progressive training and applications software house. Their specialised areas of experience lie in the fields of financial planning, word processing and database management utilising a broad range of microcomputers. Increasing demand for this company's products and services has created a requirement for a Trainer who will be responsible for devising and implementing customer training courses. Specific areas of interest will be a knowledge of financial management/planning systems (ideally Multiplan, Visicalc and Supercalc) and word processing systems. The ability to write 'tailored' manuals will be necessary and experience of IBM PCs, CPM and Basic would be a definite advantage. Our client will offer an attractive salary and opportunities for career development as the company grows.

LOCATION: MIDDLESEX JA339/2

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Please apply with curriculum vitae or telephone George Shaw on 01-549-9236 (24 hour answering service) for an application form.

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c.£10,500

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Candidates should have three years' RSTS experience in a BASIC PLUS programming environment. Knowledge of CP/M based systems would be an added advantage

Conditions include:
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The company has successfully implemented modules of a sophisticated Manufacturing Resource Planning System, and is now embarking on the next major phase.

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The successful candidate will have at least five years' data processing experience and will have successfully implemented at least one major project using an M.R.P. system. Knowledge of TOTAL database would be an additional advantage.

For further details, please contact Barry Turton on (0270) 627206 weekdays, or Alsager (09363) 4743 during evenings and weekends, or write to him at the address below.

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They are seeking Data Processing Specialists who wish to broaden their experience and work in a professional and stimulating environment.

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* a variety of products and hardware.
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* clients from multinationals to small companies.

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(7283)

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RPG III

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Within the next few months, we will be relocating our IBM System 38 facility from the City of London to Shropshire and we therefore now wish to recruit several experienced personnel with the knowledge and flair to make this move as smooth and efficient as possible and to contribute to our future success.

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Our first requirement is for a Programmer, probably with at least eighteen months experience on IBM GSD facilities and with an in-depth knowledge of RPG II or RPG III.

Initial involvement will be on order entry and distribution systems, but you can expect exposure both on development and maintenance in a variety of applications.

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We also wish to recruit two young Operators with some experience of IBM RPG programming who are keen to develop their skills in a progressive environment. After initial training in London, the successful Candidates will be given early exposure to a number of applications.

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To arrange a prompt and confidential interview, please contact our Advising Consultant, **Jim Mitchell** on **021-236 3781** (24 hour answering service) or on 021-427 2291 (Evenings and Weekends until 9.00 pm).

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DALROTH

Saudi Arabia

IBM/HP 3000 IMAGE NETWORK

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£18,000-£30,000

DATABASE DESIGNER – a key appointment requiring a sound DB design and implementation background. To be involved at all stages through to implementation. IMAGE experience essential.

SYSTEMS and PROGRAMMING MANAGER – to manage, support and maintain HP and IBM systems and communication software. A sound systems and programming background, ideally including HP and IBM, is desirable.

SENIOR SYSTEMS ANALYST – specific experience at senior level on Inventory, Military Logistics (68/1 or 67/1 ideally), work performance scheduling and control systems would be ideal. Responsibilities will include sub-systems project development.

SYSTEMS ANALYST – systems experience gained on Materials/Inventory/Supply/Logistics systems combined with a COBOL programming background would be ideal. HP 3000/IMAGE or equivalent mini experience preferred.

PROGRAMMERS – a minimum of three years' COBOL programming experience required, the most recent of which should be on HP 3000 with IMAGE and ideally QUERY and VIEW.

SYSTEMS PROGRAMMER – for HP/MPE system to include support, performance monitoring, enhancements, tuning and maintenance. HP/MPE experience essential.

This Major Project is to provide a High Technology Supply and Maintenance System for the Royal Saudi Air Force. It is being designed from the conceptual level and will therefore break new ground in both Design and Concept.

£10,000-£23,000

OPERATIONS MANAGER – to manage, plan and control all operational activities. HP and IBM experience preferred.

BUSINESS/O & M ANALYST – Responsibilities will include system procedures, user training, system utilisation and integration of sub-system elements. An analysis/programming and operating background would be ideal.

DATABASE ADMINISTRATOR – to effect changes to and maintain DB systems. Design and maintenance of information systems is required. IMS or IMAGE experience would be ideal.

OPERATORS – various requirements for operators/senior operators with experience on IBM or HP hardware.

OPERATION SUPPORT – ideally with knowledge of 68/1 or 67/1 automated maintenance or supply management systems or RAF supply system experience. To provide support in operational environment.

DB DATA CONTROL – to assist with the day-to-day maintenance and updating of the various databases. DB input experience is required.

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It is based on a 'STAR' Network of HP 3000s using IMAGE Database software with a link to an IBM Mainframe. The Company's conditions and benefits are second to none in the area. Appointments will initially be offered on a 12 months renegotiable contract basis.

Our clients will be in the U.K. to conduct final interviews at the end of January

For further information please contact Ian Murray West or Peter Henrick on day, 01-493 2947 from 8am-10pm or weekends Peter Henrick on 01-390 1640 quoting Ref. 5036 or use the application form on the Dalroth Centre Pull-out.

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(7301)

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PACT (7333)

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Please write in confidence in the first instance to: Mr S.W. Morgan, The Chairman, M.D.A. Group, Watling St. Chambers, 21/23 High Street, Northwich, Cheshire, CW9 5BY.

MDA

(7287)

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COMPUTER PROGRAMMER

£8,284 - £9,712

To work chiefly on the Operational Command and Control Computer System which is based at Police Headquarters, Stafford. The Systems Analysts will act as Deputy to the Principal Computing Officer.

Staffordshire Police is one of the foremost innovators in U.K. Police Computing, and have pioneered the development of a number of important operational computer facilities.

The successful applicants will have extensive experience of on-line, real time computing, with a minimum of 5 years in the industry. A knowledge of Ferranti, Argus, 700 computer architecture and of programming language Coral 66 would be an advantage.

Application forms, returnable by 6th February, 1984, and further details available, on request, from: The Chief Constable, Staffing Department, Staffordshire Police, Chief Constable's Office, Cannock Road, STAFFORD ST17 0QG. Tel: Stafford 57717, Ext. 216.

(7269)

System 38 RPG III Programmer

required

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Our client, a subsidiary of one of the world's largest insurance groups, is in need of a programmer with at least one year's sound IBM System 38/RPG III experience to join its data centre team and take an active part in the development of a major new system.

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HP 3000 **c£13,000**

Our Client is a Central London based financial concern, part of a UK multinational group. They currently utilise an HP 3000/40 but will be upgrading shortly to a 3000/42. Due to expansion within their market they wish to appoint a Senior Analyst/Programmer to take responsibility for existing and future systems development.

Applicants, probably in their late 20's or early 30's, will have a sound background in COBOL with some exposure to systems analysis. Any knowledge of HP systems and software will be advantageous although not essential as management ability is the essential criteria. The successful candidate can expect a high degree of user contact and must therefore be an effective communicator at all levels.

In return our Client offers a generous starting salary with the possibility of a company car and a move into a management position at an early stage. If you are self motivated and looking for a challenge in an expanding environment, call Mike Harmer for further details.

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Computing Services Association

(7387)

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The aim of the group is to assist the ESC's application programmers to concentrate on their trade, not the mechanics of producing code. It has particular interests in SCRIPT/DCF, VSAM, PL/1, ACF2, 6670 laser printer and videotex.

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If you are interested and wish to apply for one of these positions, please send a full C.V. to Mary Richards, ITT Europe Engineering Support Centre, Great Eastern House,, Edinburgh Way, Harlow, Essex. CM20 2BN.

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(7296)

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Place of work : Paris and suburbs.

the other, • will be responsible for office automation and telecommunication problems within the department.
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- transfer of information between HP 3000, VAX, PDP 11, WANG, IBM 43XX.
• he or she will also have to maintain and create diverse databases for use within the department.

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Send CV with photo and references to: L.E.R.S., Département Administratif et Technique, 58-60 rue de la Glacière 75013 Paris.

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Closing date for receipt of applications is 3 February 1984

Leicester Building Society (7308)

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Box number replies should be addressed to:

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Please write, enclosing CV to: Marion Kay, Cullinet Software, Cullinet House, The Broadway, Stanmore, Middlesex HA7 4DU.

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Cullinet (7292)

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Please contact in the first instance: Gertie Petit on 01-952 8092 (office hours) or 01-868 0355 between 6-9 pm.
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Aged 25-30, qualified to HNC/HND in a relevant science discipline, you'll have at least 3-5 years' similar experience of microprocessing systems such as Z80, Motorola 6802/6809 and Assembly Code
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(7235)

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For the IBM systems CICS experience would be an advantage although training will be given where necessary.

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(7242)

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...working in *Saudi Arabia* with BRITISH AEROSPACE

Responsibilities include providing students with a thorough grasp of the principles of computer programming and operations and preparing computer systems programme routines and procedures. Successful applicants will be required to give instruction in Cobol, machine coding, test routines and programme verification; operation of computer equipment and peripherals; and processing and control of data flow.

Applicants should have graduated from an appropriate civil or military Technical Training Institute, having gained HNC or equivalent in Engineering, Computer Sciences or Mathematics. They should be able to show at least 3 years' recent programming experience relevant to the Hewlett-Packard HP3000-44 computer installation which is the current equipment, using Cobol and Interactive Data Processing. Candidates must be familiar with modern computer-based training techniques and must have gained at least two years' experience as instructors in the past five years.

In addition to the high *tax-free* salary, successful applicants will receive free accommodation, messing, medical care and other benefits, including travel-paid UK leave.

Please apply in writing giving brief details of appropriate experience or telephone Preston 634317.

The Personnel Officer, Saudi Arabia Support Dept., 001/CW FREEPOST, British Aerospace Aircraft Group, Warton Division, Warton Aerodrome, Preston, Lancs. PR4 1LA.

(7052)

BRITISH AEROSPACE
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university college of swansea

Department of Electrical and Electronic Engineering

Applications are invited for a post of Lecturer in the Department of Electrical and Electronic Engineering. Applicants should have research interests in one of the main research areas of the Department: Microelectronics, Computer Engineering and Signal Processing, Communication, Control and Instrumentation. Preference will be given to applicants with research interests in Computer-Aided-Design in one or more of these areas.

The appointment will commence on the soonest date that can be arranged, and will be on the scale £7,190–£14,125 per annum plus USS/USDPS benefits.

Further particulars and application forms (2 copies) may be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea SA2 8PP, to which office they should be returned by Friday, 17 February, 1984.

(7132)

BOX NUMBERS

Box number replies should be addressed to:

Box Number .....

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

RPG III

A success story in Shropshire

"These positions represent a unique opportunity to make a positive impact on the success of our Company's development programme."

We are a highly respected leader in the consumer goods sector with a reputation for quality products that are enjoyed by a wide customer base. These products, together with innovative press and TV advertising, have elevated us to a very strong position within world markets and further growth is envisaged in 1984.

Within the next few months, we will be relocating our IBM System 38 facility from the City of London to Shropshire and we therefore now wish to recruit certain key personnel with the knowledge and flair to make this move as smooth and efficient as possible and to contribute to our future success.

Systems Analyst c £12,000

The successful applicant will become an integral part of our small team; actively involved in projects from initial user contact, through systems specification and design, to programming and implementation. At least two years systems experience combined with a strong exposure to IBM System 34 or System 38 equipment is essential. Personal skills are equally important and self motivation, resourcefulness and good powers of communication will ensure personal and professional credibility when dealing with both Data Processing staff and senior user management.

Analyst/Programmers c £10,500

We also wish to recruit two experienced Analyst/Programmers with an in-depth knowledge of programming in IBM RPG and probably with at least twelve months analysis experience on GSD equipment. The successful Candidates will be capable, not only of meeting deadlines with the minimum of supervision, but also of exhibiting a positive yet flexible attitude to their work.

The excellent remuneration packages include 4 weeks annual holiday, immediate life assurance cover, pension scheme and private medical insurance. Full relocation expenses will be paid where appropriate. For an immediate and confidential interview telephone our Advising Consultant **Jim Mitchell on 021-236 3781** (24 hour answering service) or 021-427 2291 (Evenings and Weekends until 9.00 p.m.).

Technical, Sales & Management Appointments

SCR Specialist Computer Recruitment Ltd

SOUTH: James House, 45 James Street, London W1M 6HS, 01-935 0671/486 0481
MIDLANDS & INTERNATIONAL: 35-37 Great Charles Street, Queensway, Birmingham B3 3JY, 021-236 3781
NORTH: International House, 84 Deansgate, Manchester M3 3EE, 061-833 0427
BELGIUM: Avenue Louise 327, Boite 4, 1050 Bruxelles, 010 322-640 7191/71
HOLLAND: Wilhelminapark 92, 1071 NM, Amsterdam, 010 3120-790647

Applications Software Products

Development Staff
Hampshire

Systems Consultants
From £12,000 to £16,000
plus car scheme

Technical Team Leaders
From £10,000 to £13,000

Programmers
From £8,000 to £10,000

Our client a fast-growing systems house part of an international group is seeking a number of key staff to support the development and implementation of software products and services for client companies operating in the industrial sector.

- Minimum of six years data processing experience of which at least three years must be in systems
- Previous involvement in the design of interactive, database systems desirable
- Applications experience in manufacturing, commercial or accounting systems essential
- Supervisory experience preferred

- Minimum of four years COBOL experience
- Previous involvement in the design and development of interactive database systems desirable
- Some supervisory experience preferred

- Minimum of two years COBOL experience
- Career progression opportunities available in both the technical and systems areas

Rewards are geared to recruiting and retaining high quality staff. Career opportunities are excellent for those individuals who prove capable of contributing to our success. Full training will be provided in our products and methods. Removal expenses will be paid where appropriate.

To apply contact: Brian Postles

CADsearch, London House, 271-273 King Street, London W6 9LZ. Telephone: 01-741 8011.

هكذا من الأصل

CADsearch

Programmer/Analyst

c£10,000

"In these recessionary times, a Group that has more than doubled its turnover to £50 million is an example of skilful management, professionalism and aggression winning through"

Rural Staffordshire

Based in a beautiful area of rural Staffordshire, we are a highly successful Construction Group. So successful that in the last three years we have increased our turnover from £20m to £50m despite the recession in the industry.

We have always regarded computer based information systems as a vital component of our achievements to date and of our future development, and currently utilise a DEC PDP 11/34 with DIBOL programs operating under RSTS/E.

Because of the proposed expansion in both hardware and software, we now wish to recruit a Programmer/Analyst, probably in his/her mid to late 20's with experience of programming in an interactive language (BASIC would be ideal, but is not essential). Previous exposure to micros would be a distinct advantage, as would a knowledge of the construction industry.

We offer genuine prospects of advancement in a Company that is determined not to stand still. We fully intend to maintain and even improve our position in the industry.

For an immediate and confidential interview, please contact **Jim Mitchell** on **021-236 3781** (24 hour answering service) or **021-427 2291** (evenings and weekends to 9.00 p.m.).

Technical, Sales & Management Appointments

(7311

Specialist Computer Recruitment Ltd

SOUTH	MIDLANDS & INTERNATIONAL	NORTH	BELGIUM	HOLLAND
James House, 46 James Street, London W1M 5HS	35-37 Great Charles Street, Queensway, Birmingham B3 3JY	International House, 84 Deansgate, Manchester M3 2ER	Avenue Louise 327, Boite 4, 1050 Bruxelles	Willemsparkweg 92, 1071 H.M. Amsterdam
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New York
Telecommunications Control Technicians
$27,950 – $29,000 p.a.

One of the world's largest brokerage organisations is currently expanding its already considerable network engineering department.

Within this plan lies an urgent need for a number of Telecommunications Control Technicians whose role will be to accept problems from branch and regional offices and arrange appropriate solutions.

Required knowledge will include: Modems, Multiplexors, Diagnostic Equipment, 3705's, 3270 Bis /hc , Spectrum Datascope, etc.

OND or Degree in electronic engineering is preferred, with 2 years relevant work experience.

Long term assignments, with excellent career opportunities are offered, and as well as highly competitive rates, successful applicants will benefit from our superb relocation scheme. This includes family airfares, visas, medical and dental cover and all necessary assistance in settling in.

Interested applicants should urgently contact Mary Coleman on 01-836 8411 (24 hours) to arrange an initial interview. Successful candidates will then be interviewed by our Client in London during the week of February 11th, 1984. Alternatively send your fully detailed C.V. to Computer People International, 68/69 St Martin's Lane, London WC2N 4JS.

VLI Computer People International

01-836 8411 Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS 01-480 4013 Computer People South, 27 George Street, Croydon CR0 1LD
021-643 8501 Computer People Midlands, Alpha House, Birmingham B1 1TT 0461-491 1466 Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EH 01-836 8411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS
01-836 8411 Cyberstaff, VLI House, 68-69 St Martin's Lane, London WC2N 4JS 023-643 8732 Sales People,
Alpha House, Birmingham B1 1TT also offices in New York, Rockefeller and Los Angeles

The Market Leaders

Communications Development

Project Leaders
Software Engineers

Berkshire
£8k-15k

An expanding management consultancy in Berkshire is seeking additional Project Leaders and Programmers/Designers to join its Networking Software Development Team.

We're looking for people who want to develop their career prospects and gain valuable experience of networking, UNIX and C, an exciting combination.

The company is commissioning projects in a communications environment in the following areas:

- ★ UNIX/C
- ★ Local Area Networks
- ★ X25
- ★ File Transfer
- ★ Electronic Mail
- ★ Remote Terminals
- ★ Network Control

Benefits include a comprehensive training programme.

Project Leaders will have experience in real time software design and implementation. This is a predominantly technical position with scope for further management advancement. Previous team leadership is desirable but not essential for a graduate able to demonstrate good organisational ability.

Software Engineers should have a minimum of two years commercial software development experience in a block structured high-level language, eg Pascal, C, Coral etc.

[illegible] internal and external [illegible]

[illegible] summary please send a [illegible] Ref CW3

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Programming Professionals

Cobol

Mini-Computer Environment

North West

Salary to £12,000

+ Relocation

Our client is a highly successful, profitable company operating at the forefront of technology. Located in an attractive area of Cheshire, it is well serviced with motorway, road and rail links. Following a major review of its requirements, the company has identified the following career opportunities:–

Team Leader
Circa £12,000

The successful candidate will lead a team of around six programmers working on a variety of management information systems, primarily developed on a powerful mini-computer. It is likely that he/she will have at least five years programming experience including some staff supervision. The person appointed will be responsible for imposing and maintaining programming standards within the team, and knowledge of structured programming techniques would be of particular interest.

Senior Programmers
Salary between £9,600 and £11,300

These positions represent excellent opportunities to join small project teams engaged on a range of commercial systems. The company offer a stimulating working environment developing systems on-line and using database.

Candidates for all positions should be able to demonstrate sound **Cobol** skills, gained on any equipment, either mini or mainframe, preferably in an **on-line** environment using **database** techniques. Full training will be provided to familiarize the successful candidates with hardware and software.

Career prospects and conditions of employment are excellent, including flexitime, 37 hour week, over six weeks holidays and a relocation package where appropriate.

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(0270) 627 206

For further details, please contact Barry Turton on (0270) 627206 weekdays, or Alsager (09363) 4743 during evenings and weekends, or write to him at the address across.

The IBM SYSTEM34/36/38 Recruitment Specialists

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IBM SYS/38 PROGRAMMER/ANALYST PROGRAMMER

To £11,500 + Benefits

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FABERGÉ: A multinational corporation whose name is recognised worldwide as being synonymous with excellence and style. Their products are accepted as market leaders with representation in over 124 countries. The corporate philosophy is of a young and dynamic atmosphere with continuous long term development plans.

THE VACANCY: Requires a professional who would like to work in a relaxed and informal atmosphere. The successful applicant will be encouraged to 'roll their sleeves up and get involved'. Every opportunity will be given to develop both responsibility and technical knowledge. RPG experience and self motivation are essential and the ability to communicate with users is important.

THE CHALLENGE: Will be in developing the sales force manager and solving the marketing division's long term software needs. In addition helping to complete the successful installation of Maaplcs with thought being given to the purchase of additional add-ons.

TO APPLY: Please call Donna O'Callaghan on 01-354 1055 during office hours or on 01-474 9495 during evenings and weekends. Response will be treated with strict confidence.

MARCH COMPUTER RECRUITMENT LTD
1 NOEL ROAD, LONDON N1 8HQ
01-354 1055

SYSTEMS DESIGNER/ANALYST

to £14,000 per annum.

We have an interesting opportunity for a talented designer to join a growing systems house based in the City.

The application areas are mainly financial and it would obviously be an asset if candidates had previous City financial experience, however we do not rule out the likelihood of proposing candidates from other backgrounds.

This position will suit a d.p. professional who is either currently a systems analyst/designer or alternatively an analyst programmer who wishes to move into a more demanding role.

If you feel that you have the personality and strength of character to handle a challenging role in a fast moving environment then please contact Chris Morrow on 01-837 0461 for further details.

TOTAL SELECTION LIMITED
388, City Road, London EC1V 2QA

01-837 0451

(7288)

Real Time Software Specialists

Farnborough, Hants.
To £13K

Real Time Developments is an independent systems house specialising in high-quality real-time software systems. We have an immediate requirement for a number of real-time software specialists to enable us to expand in line with our plans for 1984.
The people we are looking for are preferably graduates with two or more years experience in any real-time applications. Experience should have been gained on minis or micros, with knowledge of both assembler and high-level languages.
Apart from a highly competitive salary, benefits include BUPA, health assurance and paid overtime. The company offers ample scope for genuine career advancement, with employees being encouraged to assume responsibility as soon as they are ready for it.
1984 holds great promise for RTD; why not be part of our success story? For more details contact Geoff Burnes on Farnborough (0252) 546213 or write to

rtd

Real Time Developments Ltd.,
Lynchford House, Lynchford Lane,
Farnborough, Hampshire, GU14 6JA.

Ferranti Computer Systems Ltd.

Lecturer

Computer Hardware

A computer professional is required as a hardware lecturer in our expanding Technical Training Centre at Bracknell.

The person appointed will be required to contribute to the teaching of microcomputer technology and real-time computer architecture as applied to the Company's wide range of military-computer products.

Applicants should possess relevant professional qualifications and/or experience. The possession of a teaching qualification would be an advantage but is not essential as guidance in lecturing techniques would be provided.

As you would expect of a major international company, we are offering attractive salary and benefits packages, which include assistance with relocation where appropriate.

If you are interested please contact the Recruitment Section at Ferranti Computer Systems Ltd, Western Road, Bracknell, Berks. RG12 1RA.
Tel: Bracknell 483232, ext. 3471. Please quote ref. B/1063/CW.

(7129)

FERRANTI
Selling technology

Our clients are market leaders in the insurance sector with a continued commitment to the enhancement and development of their computer systems.

A range of staff is required and the job titles available include ANALYST PROGRAMMER, DESIGNER, ANALYST, SENIOR ANALYST and DATA BASE ANALYST.

We are particularly interested in candidates with an IBM background which includes programming in COBOL or PL/1 together with exposure to on-line or data base orientated systems. IMS, CICS or DL/1 would be particularly relevant in this context.

Career-minded technical staff are promised an environment where effort and achievement are rewarded, where all the necessary training facilities are provided and where staff development is considered of paramount importance.

For a confidential discussion contact T.C.R. in London or alternatively write with your C.V. quoting RS8401.

Insurance Systems Development

£10—£15,000

Programming
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Analysis
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London Based
Generous Package

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THE MASS STORAGE PEOPLE

Middlesex/Surrey Borders

***Independent Computer Engineering** are market leaders in the field of intelligent mass storage/ multiplexing and data back-up products for the microcomputer industry.*

Since their formation, when they launched the first UK designed hard disk for the APPLE market, ICE has been instrumental in solving the problem of shared mass storage within the micro computer arena.

The turnover for 1983 was 300% up on that of 1982, and with the recent announcement of yet another innovative product range, ICE can now justifiably claim to be a major force within micro computing technology.

1984 heralds yet another year of expansion with impressive in-roads being made in local area networking, hard disk interfacing and micro-computer support.

To enable such an extensive development programme to run smoothly, high calibre, dedicated and determined computer professionals are needed now within the following technical areas:-

CUSTOMER SUPPORT

Support Technicians

£10–14K Plus Car

To work within the Customer Support Department providing both pre and post sales solutions. Successful applicants should possess good communication skills and a wide knowledge of 8 and 16 bit micro computer systems preferably at a software development level. These challenging positions offer the career minded individual the chance to gain total support experience covering such aspects as pre/post sales technical enquiries, troubleshooting and the organising/presenting of demonstrations and seminars.

QUALITY ASSURANCE

Q.A. Controller – Hardware

£13K Plus Car

A unique position within the ICE Organisation. The successful candidate must possess a digital electronics background, ideally having worked for an equipment manufacturer, with a proven track record in hardware quality assurance. Initially heading up a small team of test engineers, planned growth within this department in 1984 is exceptional. For the right individual the scope is limitless, with an initial brief that includes responsibility for budgetting, equipment selection and establishing test procedures. The position interacts with field service, third party maintenance sources, development and suppliers.

QUALITY ASSURANCE

Test Engineer

£9–10K

Working within the Testing Department, this position would suit a candidate with supervisory potential. A knowledge of 6502 and Z80 microprocessors is sought together with a knowledge of VLSI and TTL. Provides exceptional opportunity to develop one's career utilising the latest technical equipment in micro technology.

SOFTWARE DEVELOPMENT

Software Engineers

£8–14K

To join the Company's highly skilled and resourced development team working with MSDOS, UCSD P-System and CP/M family operating systems. Successful candidates should have sound operating systems level experience of 8088, 8086 and 6502 microprocessors together with 8086 machine code, CPM/86 and PCDOS/MSDOS. Additionally, experience of APPLE native operating systems and the UCSD P-System would be desirable. Stretch your system skills to that limit as you design and implement high level (PASCAL and 'C') utility software, low level (8086, 68000 and 6502) operating systems and BIOS interfaces.

HARDWARE DEVELOPMENT

Hardware Engineer

£12–14K

To work within the Hardware Design & Implementation Group. The successful applicant must have solid design experience of either 8 or 16 bit micro computers and be capable of providing efficient, low cost reliable solutions to design problems. Duties to include the design and implementation of micro computer network controllers for tomorrow's micros thus helping ICE to implement advanced network architecture within the micro computer field.

All positions advertised provide unparalleled career opportunities for both technically orientated and management seeking candidates.

For further information please contact **Adrian Hardy** on **01 935 0671** (24 hour answering service) or Walton-on-Thames (0932) 224766 evenings and weekends.

Technical, Sales & Management Appointments

(7310)

Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street, London W1M 5HS
01-935 0671/486 0481

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021-236 3781

NORTH
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061-833 0427

BELGIUM
Avenue Louise 327, Boite 4, 1050 Bruxelles
010 322-648 7181/71

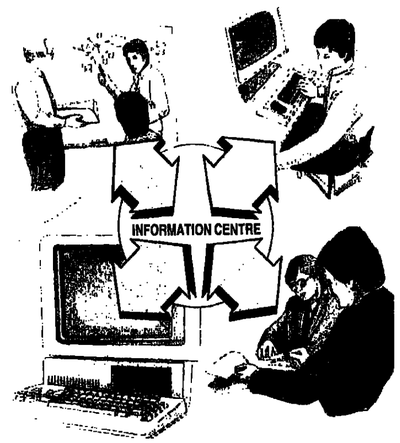
HOLLAND
Willemsparkweg 92, 1071 H M. Amsterdam
010 3120-760947

At the Centre of Development

The Information Centre concept grew from a need to provide users with a method for developing their own applications within a controlled environment utilising information and personal computing systems compatible with existing IBM architecture. We have established this concept, as ideas for new systems dedicated to specific applications can often be identified by users with practical experience of the job. In many cases however the relative simplicity of developing such applications does not merit the full project cycle. Instead the users can access the Information Centre for consultancy support and guidance on software tools along with educational and training support.

To ensure effective utilisation of the Information Centre we are building a team of specialists to link user requirements to the Information Systems Department.
We now require a DATA SPECIALIST to augment the team.

Arthur Young McClelland Moores & Co. provide clients with a full range of accountancy services including consultancy. The firm has over 160 partners and more than 2,200 professional staff operating from 21 offices located throughout the country.



Arthur Young Mc Clelland Moores & Co.
A MEMBER OF AMSA IN EUROPE AND ARTHUR YOUNG INTERNATIONAL

Analyst Programmer (Data Specialist)

We are seeking an analyst programmer, with database experience, to fill the role of Data Specialist. Responsibilities include managing the effective use and relevance of data resources, defining data requirements for end user applications and providing copy management facilities. In addition the Data Specialist will prepare data for manipulation by end user computing tools, so the ability to assess suitable software tools is required. The capacity to develop and implement education aids is necessary.

You should have four to five years programming experience with a sound Cobol background in at least two hardware environments one of which should be IBM, preferably 4341. Knowledge of high level languages such as RPG II, Easytrieve and database, such as DL/1, Total or Adabas is required, along with the ability to present the Centre's services to users.

Salary To £14,000
Location: London

For further details including company information please ring Francesca Drinkwater or return the coupon below.

D.P. Recruitment SERVICES LIMITED
A Dupont Computing Company
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Name
Address
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TK 231

COMPUTER AUDIT

Senior Auditor Data Processing

BATH up to £12,144

A Senior Auditor [D.P.] is required to replace a recently promoted member of a small team based at Sydney Wharf, Bath.

The person appointed to this position will be engaged in:–
[i] Appraising the soundness and adequacy of operational procedures within the Computer Department.
[ii] Assessing the adequacy of controls in both developing and existing computer applications.
[iii] Writing file interrogation programmes for audit purposes.

He/she will be responsible to the Assistant Audit Manager [Data Processing] but will work largely independently on investigations and report preparation for discussion with senior management.

Accounting experience in a computer environment with familiarity with operations, systems design and programming is essential.

Salary will be within the range £10,499 – £12,144 and the benefits normally associated with a large, progressive organisation will apply including, where appropriate, relocation expenses.

Application forms can be obtained from:–
Recruitment Officer, South West Gas, Riverside, Temple Street, Keynsham, Bristol BS18 1EQ.
Telephone [02-756] 61717 ext 3577.

Closing date for applications: 3rd February, 1984.

SOUTH WEST GAS

(7272)

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FOR PROGRAMMERS

OPPORTUNITIES IN COMMUNICATIONS

£9-£13.5K Canterbury, Surrey

Communications is the fastest growing and most exciting sector of the computer industry. Our client is continually demonstrating its expertise in the implementation of voice response, viewdata and associated communication and network systems. This has led to an impressive list of major companies throughout the UK and Europe who have chosen our client's products as the best available for their needs.

Opportunities have arisen for a Senior Programmer and Programmer to become involved in the development of exciting new communications products. Those seeking real responsibility will see projects through from feasibility to implementation and have the opportunity to provide some sales support to customers.

Working in a small, friendly and informal environment will ensure that endeavour and application are instantly recognised and subsequently rewarded.

Experience of communications software development is essential for the more senior position. Successful applicants will have:-

- *Experience of Assembler languages, preferably DEC MACRO 11.*
- *Minimum of 2 years software development.*
- *High level of motivation.*

Company benefits include regular salary reviews, excellent career prospects, free family medical insurance, generous pension scheme and relocation assistance where appropriate.

For further details please telephone Keith Taylor on Reading (0734) 595346 or write enclosing full c.v. to our Reading Office.

Interviews will be held in London and Reading.

McCOURT COUSINS LTD.
Computer Recruitment Consultancy

27-29 Greytriars Road, Reading, Berkshire
Telephone (0734) 595346 (24 hours)

Chesham House, 150 Regent Street, London W1R 5FA
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(7314)

COMPUVAC

"C" YOUR NEXT UNIX JOB HERE!

CITY MERCHANT BANK — **TO £20,000 PLUS BANK BENEFITS**

UNIX AND "C" EXPERIENCE

FROM ONE YEAR'S PROGRAMMING UP TO SENIOR SYSTEMS ANALYST, URGENTLY REQUIRED

My Client offers the opportunity to develop your DP skills in a new, progressive Division committed to the latest advances in modern technology.

This International Banking Organisation is on Phase One of a new project to develop a Security Trading System being implemented on large minis. Banking experience is useful but not essential, though you must be able to work under pressure and to time schedules in a team of 12. My Client offers career prospects as well as the usual banking benefits which include mortgage subsidy, free pension, interest-free season ticket loan, etc.

PLEASE CONTACT JILL HARVEY OR JIM CHRISTIE, DAYTIME 250 0456 EVENINGS/WEEKENDS: JILL 01-701 5530 JIM 01-858 3884

The above is one of many UNIX and "C" vacancies we have in London and the Home Counties, in both Commercial and Scientific/Technical environments. There are also hundreds of other positions available requiring skills in other languages and computers in our Commercial Mini/Micro and Scientific/Technical Divisions.

IBM

IBM SYSTEMS PROGRAMMERS
£12,000 TO £19,000 + BENEFITS

A large number of our major IBM clients are currently looking for experienced Systems Programmers. You will have a minimum of two years experience either on DOS/VSE and VM Systems or MVS systems, ideally using COBOL or ASSEMBLER languages and associated software including CICS, DL1. Any Communications/Networking experience would be extremely advantageous in some cases. Ref: I1/CW

IBM COBOL PROGRAMMERS
TO £12,000

If you have at least one year's programming experience using IBM COBOL either on DOS or MVS systems and would like to move into a stimulating development environment, a number of companies based in Central London would like to hear from you. More senior Programmers will have at least one year's knowledge of CICS/DL1 or associated on-line systems. Ref: I2/CW

PL1 PROGRAMMERS
TO £11,500 + BENEFITS

A large financial organisat on based in the North of London are looking to recruit experienced PL1 Programmers with at least two years' experience working on DOS VSE or MVS systems. You should also be familiar with program design, coding, testing and the ability to assist other staff with problem solving and training. A generous benefits package is offered including a mortgage subsidy and relocation expenses. Ref: I3/CW

IBM ANALYST PROGRAMMERS
£11,000-£13,000

Experienced Analyst Programmers are urgently sought by three Large IBM users in the Commercial Sector. Suitable applicants will have two years experience as an Analyst Programmer at least one of which should have been in an Analyst environment. Essential requirements are basic IBM 4/80 experience on MVS systems using IMS/DC, Cobol, some CICS and DL1 would be a distinct advantage. Ref: I4/CW

CONSULTANT ANALYST PROGRAMMERS
£10,000-£14,000

Three of the largest Consultancies in and around Central London require experienced IBM Analyst Programmers who have worked in the Insurance sector. Suitable candidates will have exposure to the following: Life, Pensions, Unit Trusts, and include COBOL, BASIC and ASSEMBLER. Any knowledge of Banking Software preferable as is experience either on small hardware systems or mainframe systems. Ref: I5/CW

OTHERS

HONEYWELL
TO £11,000

Vacancies in W. London, Bucks, Surrey, Kent, at all levels for Programmers with sound GCOS skills, particularly TDS and IDS. Perks include bonus scheme, cars, etc. Programmers with GCOS/NETWORKING Technical Skills are particularly sought Ref: 01/CW

ICL 2904 AND 2900
TO £12,000

Numerous vacancies at all levels for sound ICL Programming skills. Particular requirements are for VME B skills coupled with IDMS and/or TP. Numerous opportunities in the 2904 ME29 area ... again TP skills are valuable. Some requirements for S16-S26 talents also. Environments cover manufacturing, commercial and finance/banking. Ref: 02/CW

UNIVAC
TO £10,500 + PERKS

Analyst Programmers with Database and/or On-Line skills to manage two years experience in commercial or manufacturing environment. Also some opportunities for people with good 1100 experience to move into finance/insurance. Ref: 03/CW

ME29, TPS
£8,000 TO £10,500

Three positions in Central London requiring experience using final ME29s, one year with basic TPS, remainder for training with the possibility for experienced COBOL Programmers. Salaries are negotiable and excellent benefits package applies. Ref: 04/CW

IMMEDIATE CONTRACTS!

BURROUGHS, ALL LEVELS, MED. SYSTEMS COBOL, DMS II, GEMCOS, 6 MONTHS

B20, ANAL/PROG, COBOL/PASCAL, COMMERCIAL, 12 MONTHS

PL1 MVS, ANALYST/PROG, COMMERCIAL

VERY URGENT

ANALYST, TOTAL DATABASE, CL VME B, COMMERCIAL, 6 MONTHS

HONEYWELL LEVEL 6, PROG, COBOL SCREENWRITE, MIN. 6 MONTHS

FOR THESE AND MANY MORE CONTACT SIMON FOSTER

IBM

IMS PROGRAMMERS AND ANALYSTS
TO £16,000 + BENEFITS

One of the leading Banking organisations is currently looking for IMS specialists to work in their development area on large financial systems. Candidates should have a proven track record using IMS DB/DC and been programming in COBOL and/or MKIV languages. Previous banking experience in a related environment would be highly advantageous Ref: 05/CW

IBM BUSINESS ANALYSTS
£10,000-£15,000

A large Engineering Company based near Central London wishes to recruit Commercial Analysts with two-four years experience based on IBM MVS systems. You will have come from a programming background using COBOL and ASSEMBLER and probably CICS. The position would necessitate exposure to FOCUS and though this is not obligatory it would be a decided advantage Ref: I7/CW

IBM DATABASE ANALYSTS
TO £14,000

This financial organisation is looking for experienced Database Analysts and Administrators with a minimum of two years background in these areas. Your experience should include IBM PC, DOS and MS and you will be familiar with the operation of one of the following: IDMS, DATAMANAGER or similar. Ref: I8/CW

IBM SYSTEMS DESIGNERS
£10,000-£13,000 + BENEFITS

Ref: I9/CW

GSD PROGRAMMERS & ANALYST PROGRAMMERS
£8,000-£13,000 + BENEFITS

CPS RECRUITMENT CONSULTANTS

253 5042

250 0456

COMPUVAC HOUSE
231-125 City Road, London, E.C.1
(NEXT TO OLD STREET TUBE EXIT) OR SEND C.V. TO
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ROAD TRANSPORT INDUSTRY TRAINING BOARD

SYSTEMS ANALYST

SALARY: £12,027 p.a.

The Board requires a Systems Analyst to join a small team at its Wembley Headquarters. An ICL ME29 (1Mb, tapes and discs) working under TME has recently been acquired.

A major restructuring of the Board has necessitated re-examination of all applications and many are being re-written rather than converted. In addition packages are being evaluated for the accounts, sales and purchase ledger systems. Whilst the successful applicant will be involved in a wide range of systems the first task is likely to be the implementation of this package and experience in accounting systems will be an advantage. The need for a small amount of COBOL programming occasionally arises.

Terms and conditions of employment include 20 working days holiday eventually rising to 25, contributory pension scheme and life insurance, a 35 hour week and Luncheon Vouchers.

Please telephone the Personnel Department for an application form on 01-902 8880 ext 334.

Norsk Data is a rapidly expanding manufacturer of 16 bit minis and 32 bit superminis with our European and UK Headquarters based in the Berkshire town of Newbury. We also have a rapidly growing R+D activity at Newbury, and are looking for self-motivated individuals to expand our

ADA COMPILER DEVELOPMENT

The successful applicants would be able to look forward to a demanding and interesting career in the development of complex software. They will have a good education and at least one year's experience in compiler development, preferably with a manufacturer or software house. They should be able to work in small teams and accept responsibility for their work immediately.
The standards we set are high, and the salary will be commensurate with experience and ability. The company also provides help with re-location, private health insurance, contributory pension scheme, subsidised canteen and generous holiday allowance.
Please telephone
Andy Pepperdine on
Newbury (0635) 35544,
or if you prefer, write
sending a CV to: (7370)
Norsk Data Limited,
Strawberry Hill House,
Bath Road, Newbury,
Berkshire RG13 1NG.

Systems that put people first

Norsk Data

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Latest Computer Systems

SO THE CAREER FOR YOU IS APPLICATIONS/SUPPORT

Our client, a leading manufacturer of commercial and industrial micro systems, is looking for Applications/Support Engineers capable of Hardware/Software problem handling whilst being credit-able at all levels.

Educated to Degree/H.N.C. level, technically competent with a commercial flair???

Then call KEITH WALLIS now on (7358)

01-543 4844 day (048641) 2675 evening
ALLTRONICS PEOPLE (Agy)
Adv. 1276

IBM SYSTEM/34

MULTIMILLION POUND BANKING AND INVESTMENT GROUP

Requires a very good Analyst/Programmer in the Isle of Man to take charge of System/34 installation and to develop both banking and property management systems.

Preference will be given to individuals with at least three years' relevant System/34 experience and the ideal candidate should have experience of working in a banking environment.

Salary and employment conditions will be above average and will reflect the importance placed on having a motivated and capable person in this important job.

Replies to Box No. 1283 (7191)

PERMANENT

Programmers — **Central London** — **£11K**

Minimum two years' experience IBM 34, 36 or 38, RPGII or III, £11K
Project Leaders/Consultants with good DP experience, £Neg
Banking or insurance preferred. Above to work in areas of Dev, MKTG or Quality assurance.
All applicants must be willing to travel abroad at short notice. Ref: 387/DF

Prog./Technical Support — **Central London** — **£12K NEG**

Graduate preferred, minimum three years' COBOL programming experience with ability to communicate effectively at all levels. To design interrogation packages for users, prepare and present in-house training courses and provide technical support. Opportunities for some travel. Ref: 388/DF

Project Leader/Programmer — **City** — **£11K NEG**

Minimum two years' experience for conversion of IBM PC micro computer network, must be able to communicate effectively and aid promotion of product. Opportunities to learn micros, gain banking skills and, in future, transfer to USA if desired. Ref: 389/DF

Programmers — **Worcester** — **£NEG.**

(a) Good experience of VAX/PASCAL. Must communicate effectively as working with the users.
(b) Good experience of DEC PDP11 or VAX with PASCAL, CORAL or FORTRAN. Radar experience an advantage. Ref: 390/DF

Contact Diana Fabregas at KPG or 01-789 8714 (evening or weekends)

Analyst/Programmer — **Essex** — **£8,500 to £12,000**

Nationwide manufacturing company seek ambitious Analyst/Programmers with minimum 3 years' experience of working in an IBM 4341 environment running under DOS/VSE, CICS and DL/1. Fluency in COBOL is pre-requisite together with experience of Librarian. If you enjoy working in a team, can absorb pressure and possess good communicative skills that is the position for you. Ref: 8205/HP

Systems Programmer — **Wiltshire** — **To £11,000**

A minimum three years' experience of Systems Programming on ICL or DEC Hardware with sound knowledge of FORTRAN and COBOL could qualify you to enter an exciting environment with our client – a household name in the publishing field. Ref: 8359/HP

Hardware/Software Engineer — **Hants** — **£7,000 to £16,000**

Our client, a rapidly expanding company specialising in the manufacture of Communication Hardware, require quality personnel with an electronics background. Experience on Intel Z80 micros and Disc interfacing together with familiarity in a R and D environment are pre-requisites. Ref: 8385/HP

Data Processing Manager — **Herts** — **Min. £12,000**

Electrical manufacturing company require DPM with sound fluency in RPG II on an IBM system 34. Experience of MAAPICS together with sound communications skills will qualify you for entry into a dynamic user-orientated environment. Ref: 8383/HP

Contact Haydn Parry at KPG

Analyst Programmers — **Surrey** — **£10K**

Good commercial background is required by this company who are currently looking for an Analyst Programmer to work on their ICL ME29. You should possess solid programming experience with at least one year at Systems level in an on-line environment. Ref: 8368/PH

Analyst Programmer — **Bucks** — **c£12K+ Car + Bonus**

This job involves talking to customers about new systems/enhancements etc and providing support after successful implementation. You should be self sufficient with good COBOL experience and will be working on Honeywell level 6. Ref: 8346/PH

Programmer /Analyst — **West Sussex** — **c£9,500K+ Bonus+ Relocation**

This small DP department are currently looking for a COBOL programmer with a minimum of two years' experience in an on-line environment, preferably on the Honeywell Level-6. Ref: 8362/PH

Cobol Programmers — **Surrey** — **c£8K to £10K**

Two programmers with a minimum of 12 months' solid COBOL required for development work on Burroughs B1000 series. Ref: 8366/PH

Contact Peter Hennessey at KPG or 0293 516322 (evenings or weekends)

A large DOS/VSE, CICS; DL/1 installation in West London require the following staff:

Software Manager – to supervise D/Base and Support Group – c£18,000
Systems Programmer – solid DOS/VSE experience – Negotiable
Database Co-ordinator – experienced DL/1 (or IMS) person – c£15,000
Jnr Systems Prog. – for statistical analysis work in support group – c£10,500

Contact David Mason Johns at KPG or 01-747 0969 (evenings or weekends)

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Make 1984 the year you joined one of our small teams of multi-disciplined Engineers at New Southgate. There you'll be working in a stimulating environment alongside highly skilled professionals with a mission to take up the challenge of tomorrow's communications systems and expand our business in the highly competitive UK and overseas markets.

We are currently involved in several of the most interesting telecommunications projects of the future which must inevitably evolve into fully integrated information delivery systems optimised for both voice and data. Among these STC's new digital telephone switching system, already of proven international performance, is now undergoing extensive UK software design, development and adaptive engineering.

While the course of the Information Revolution can be defined in broad contours, it cannot be predicted in detail. Whatever predictions are made today are bound to be overtaken by accelerating technology and shifting demand. What is predictable however, is the need for a number of key men and women to join us in a variety of functions:

...take your career into the 21st century now...

SYSTEMS DESIGN
Team Leaders — Systems Engineers
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SOFTWARE SYSTEM INTEGRATION
Team Leaders — Database Administrators — Software System Builders
MICROPROCESSOR APPLICATIONS
Analogue/Digital Interface Designers (Intel 8086)
EXPERT SYSTEM DESIGN
Section Head — Knowledge Engineers
ADVANCED TEST DEVELOPMENT
Senior Engineers — Hardware/Software

In all cases, we are looking for ambitious and committed Engineers who are qualified to Degree level or equivalent and can add to the depth of experience within our existing professional teams.

This is your opportunity to make a major contribution to projects capable of transforming the field of voice and data communications. In consequence, we are offering salary packages designed to attract the best people. Generous assistance with relocation expenses is available as appropriate.

...Switch to STC.

Take the most important step in your career by telephoning us on 01-368 1234 and asking for Vaughan Hartridge on ext. 2215 or Roger Edmonds-Brown on ext. 2579.

Alternatively, phone Vaughan Hartridge on St. Albans (0727) 60043 or Roger Edmonds-Brown on 01-361 2931 on any weekday evening (between 8-10pm) or Saturday or Sunday morning. If you prefer, write with full details of your experience to: Vaughan Hartridge, The Recruitment Centre, STC Telecommunications Limited, Oakleigh Road South, New Southgate, London N11 1HB.

Developing tomorrow's communications technology
STC TELECOMMUNICATIONS

هكذا من الأصل

Telecomputing

Software Designers Analyst/Programmers & Programmers for our Software Development Team and Online Project Teams

The Company

Telecomputing has, over the last ten years, established an enviable reputation as a leading independent software house. Our main product, TPS, is used at 450 installations around the world. TPS provides a complete transaction processing environment which is unique in the facilities and portability it offers to its users.
Another very important part of the Telecomputing operation is our Client Services division. This provides consultancy, design and programming services to our customer base. We specialise in turnkey projects providing first class systems on time and on cost.
Telecomputing is now recruiting more people to help us achieve our exciting objectives. We need designers and software programmers to give us the extra capacity to produce the software products that are needed to overcome the applications backlog and allow our users to realise the full potential of their hardware.
Our client services team is experiencing unprecedented demand for its resources, so we need more people capable of designing and producing the excellent systems which are the foundation upon which we have built our success.

The Requirements

Software Designers: we need people capable of making an original contribution to the design of our new products. Previous experience of software design is desirable but not essential. Knowledge of any of the following areas would be relevant: Applications generators, relational database, IKBS, MMI, DSS.

Development Programmers: we require career programmers, preferably with experience of assembler level programming, but if not good experience of a BCPL like language (C, PASCAL, S3) is essential. Based in Oxford the jobs are in a team where all individuals must be able to solve problems and program their solutions.

Consultants/Analyst Programmers: Based in Oxford or London we require people with experience in On-line systems with a mainframe COBOL programming background (ideally IBM or ICL) who are capable of designing and leading a team to produce innovative systems to commercial timescales.

Programmers: Based in Oxford or London these people must have at least two years' IBM or ICL COBOL experience preferably in an on-line environment. Much of our work is carried out on clients' sites so a willingness to work away from home is essential.

The Rewards

Salaries are highly competitive as you would expect from a leading software house.
The company actively encourages career development and provides an exciting range of opportunities for people who can accept a challenge.
Our new Oxford offices provide first class working conditions and our development hardware which comprises ICL ME29, 2956 and IBM 4331 ensures the right resources for producing software to schedule.

STOP PRESS
Trainee Programmers: Must have had some experience of COBOL programming. Based in our Manchester office, preference will be given to local applicants who will not object to long periods working on client sites away from home.

The Next Step

Is to telephone or write to:
Terry Kirk
Telecomputing plc
244 Barns Road
Oxford OX4 3RW
(0865) 777755

(7289) Telecomputing

SOFTWARE EVALUATION & HARDWARE PROCUREMENT

Have you the talent to command £14,500 p.a.

British Telecom are now in the market for a number of essential talents to work in London. We are looking for a heavyweight Software Analyst together with a support team of ICL 2900 experts plus other professionals with specific experience of datacom systems assessment. All will play a vital, pivotal role — analysing, recommending, ordering and installing hardware and software. When we reveal that a typical project involves 100 different sites, you get some dimension of the size, scope and sheer technical challenge of this assignment.

Take a closer look ...

SENIOR SOFTWARE AND HARDWARE ASSESSOR

An expert in programming (essentially COBOL) who also possesses a wealth of IBM and ICL mainframe experience. A genuine, hard-nosed professional who can assess software performance and hardware specifications against stringent BT benchmarks. A true manager who can confidently liaise with manufacturers and users alike. Above all, an agile intellect who can weigh up the merits of every potential product and then make mature, incisive judgements.

If you have the essential experience and technical reporting skills we're offering up to **£14,500** now ... and prospects of considerably more.

HARDWARE & DATACOM ANALYST

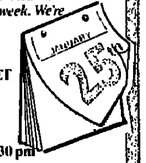
Slightly younger professionals — in their early to mid twenties range — with surprisingly mature manners. People with a genuine fascination for computers and powerful grip on all the latest hardware developments. We are particularly interested in meeting people with two very specific areas of experience. Some will have a detailed knowledge of ICL 2900's, others will specialise in network design, Modem, Multiplexer and datacom systems procurement.

If you have the right technical and reporting talents, the salary could be up to **£12,000.**

Find out more!

Ring us now and meet BT's Hardware and Software Evaluation team in Central London next week. We're booking into....

THE CAFÉ ROYAL
68 REGENT STREET
London W1
Fifth Floor
George Suite



Between 5.30 and 8.30 pm

So make a date... put yourself in line for a £14.5K salary!

Call Michelle Priestley, right away on **Freefone 2593** or direct on **01-432 9357** quoting reference **CW**
If you really can't make this date and would still like to put yourself in the running, ring us today for further details.

Data Processing Executive British Telecom

Analysts/Senior Analysts Salaries to £12,000

"An opportunity to express and enhance your skills in an advanced environment committed to new technology"

West Midlands

We are a highly successful organisation, with substantial reserves and able to demonstrate considerable growth within our industry.
An integral part of our success to date is due to the effective use of computer technology throughout the Organisation and a firm financial commitment to expand this activity which will include the introduction of the latest sophisticated systems to further improve our efficiency.

Senior Systems Analyst c £12,000

You will have total responsibility for a team of Analysts engaged in the development of systems for a specific user area combined with day to day supervision of projects.
You should have successfully completed [illegible] from inception to implementation, have recent project management experience [illegible] and have personal skills necessary to liaise at all levels within an Organisation.

Systems Analyst c £11,000

You should have a minimum of five years' [illegible] with a commercial application environment and experience of online [illegible] systems.
Working within a [illegible] organisation [illegible] you will have excellent communication skills and a good spell in the [illegible]

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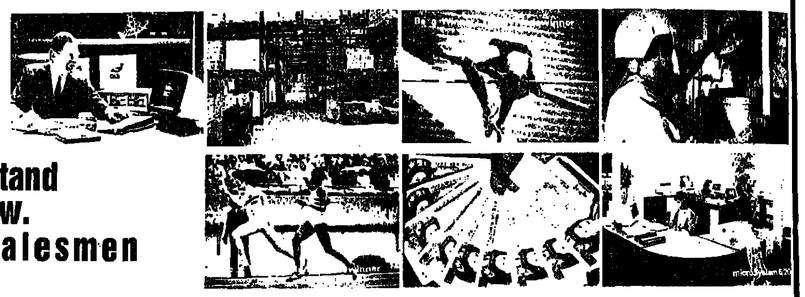

The best Minis in the UK.
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Customer enquiries unrivalled anywhere.
The Top System Builder Stand at Which Computer? Show.
Sales Managers & Salesmen to £50,000 pa.
Project Leaders and Managers to £14,000 pa.
Analyst Programmers to £10,000 plus early promotion.
Our clients include Manufacturers — Distributors, Stockists, Oil Companies, Vehicle Leasing etc, etc, etc.

SALES MANAGERS AND SALESMEN
— UP TO £50,000 EARNINGS CAPABILITY

We are inundated with top quality leads and serious business opportunities. As such, we urgently seek a number of experienced Business Systems salesman, with a proven, demonstrable track record of closing business, to join our rapidly expanding company as a Public company subsidiary.

Tradewinner offer a wide variety of Package and Custom built software running under Honeywell and ICL equipment. Negotiations are also in progress with a number of leading micro manufacturers. We seek candidates with the ability to product demonstrate, undertake initial feasibility studies, prepare a high quality tender, supported by a first class Systems Design team, and present an effective business case at Board level.

Excellent graphic aids are available. Equally, a first class reference base is already established throughout the entire UK. We are flooded with sales enquiries and actively market to provide top business opportunities for our companies. Outstanding opportunities exist for all categories of proven sales staff with early Board prospects for senior top performers. Equally, for developing salesman, with the professionalism and commitment, opportunities to triple your earnings are uniquely available via Tradewinner. Either apply immediately for Birmingham interview, or visit us on the stand at the Which Computer? Show. If you've got the ability, we've got the quality of leads you've never seen before. At present we've got Project Managers sizing up c. £250,000 worth of business p.a. so what could you, as a 'Professional Salesman?', sign up. Sell Honeywell, ICL and other manufacturers Turnkey products.
Contact John Wood or Bob Tait for early interview.

MANAGERS — SALES SUPPORT
£12,500 plus car & bonus

Have you worked with software products?
Do you know your products technically?
Have you had experience in the following:
- Sales Order Processing
- Stock Control
- Purchase Order Processing
- Ledgers
- Payroll
- Vehicle Leasing?

Have you worked in the computing industry for at least seven years, in at least two different environments?
Have you used Honeywell or ICL equipment?
Do you want to work with a successful company?
Do you want to create further success?
Do you want to satisfy clients' business needs?
Do you want to lead others?
Do you want to work with clients and potential clients?
Do you want to be in control of your own rewards?
Do you want a company car?
Do you want to be ahead of the opposition?

If you can answer YES to most of these questions, then we would like to meet you – SOON! Contact us – NOW. John Wood or Bob Tait,

ANALYST/PROGRAMMERS
£6,000 to £10,000

Have you had at least three years' programming experience?
Have you had COBOL experience?
Do you know about Sales Order Processing
- Stock Control
- Purchase Order Processing Ledgers?

Have you used Honeywell or ICL equipment?
Are you eager to develop new skills?
Do you want to broaden your horizons?
Do you want technical challenge?
Do you want contact with your clients?
Can you meet your own committed timescales?
Do you enjoy working in a professional environment?
Do you want the rewards that you think you deserve?

If you have answered YES to most of these questions, then we have got a lot to offer each other. Contact us, NOW
Bob Tait or Jeff Forrester

MANAGERS IMPLEMENTATION
£12,000 upwards plus car

Have you had at least seven years' experience in the computing industry?
Have you had experience in the following:
- Sales Order Processing
- Stock Control
- Purchase Order Processing
- Ledgers
- Payroll
- Vehicle Leasing?

Have you used Honeywell or ICL equipment?
Have you had COBOL programming experience, system analysis, and design experience?
Have you worked with software products before?
Do you enjoy solving problems?
Do you enjoy working with clients?
Do you think that computer systems are tools to be used to satisfy business needs?
Do you want to do feasibility studies for clients?
Do you think that ongoing support for a client is important?
Do you want to take an important role in satisfying current client needs, and in generating future business?
Do you want to lead others?
Do you want to receive the rewards that you think you deserve?
Do you want a company car?
Do you want a secure future?

If you have answered YES to most of these questions, we ought to be talking to each other. Contact us – NOW.
Bob Tait or Geoff Caine.

PROJECT LEADERS/MANAGERS
10K to 14K Car at Senior Level

We are seeking experienced Systems Designers/Investigators capable of undertaking an extensive number of feasibility studies in a pre-sales support role, through to Analysing and Designing Systems, right through to team control in a development role and Systems implementation at client sites.

A considerable number of packages are already used so ability to rapidly understand the features and facilities of the varying systems ranging from Order Processing, through Stock Control into BOMP, Purchasing, Ledgers, etc. would be a distinct advantage. An understanding of Cobol is mandatory, as is some demonstrable career experience of having spent at least two years programming.

Ability to communicate professionally with users is very important. Equally so, the ability to project plan and to work within committed time scales. We in turn offer attractive working conditions, good salaries, excellent career progression opportunities, and the opportunities of share investment in our own Public Group.

All candidates must be resident or prepared to become resident within the Midlands, working from our Central Birmingham base at the Aston Science Park. Excellent positions. Excellent careers but with preference for the top 20% of the industry is capability, initiative and motivation. If you feel you have the ability, but would like the scope to develop, call Tradewinner, or visit us at the Which Computer? Show, January 17th-20th.

For interview at our Data Centre call Bob Tait or Geoff Caine.

SALES MANAGER
TERMINAL PRODUCTS — UK COVERAGE — MIDLANDS BASED
ATTRACTIVE PACKAGE + COMMISSION

We seek an experienced Video Terminal Sales Executive capable of assisting in the development of a new venture as a Group subsidiary. We have an existing product generating considerable interest, especially in the 132 character screen capability. We need a senior Sales Executive with a sound knowledge of protocols, able to assist and advise our American partner company, and able to assist with Datascope Interpretations. We have a very large potential customer base to penetrate and enquiries already for over 1,000 units as a target market with our ultimate UK market alone of over 5,000 units.

We have the product, with top company account interest already generated from over 40 sites with 6 test sites installed and working. A knowledge of Honeywell and ICL protocols could be advantageous but not essential. The ability to sell direct to interested clients, negotiate and tender to large accounts, and to build a small, top quality sales team, will be essential to gain this position. A serious later Directorship opportunity exists in a Public company subsidiary, and a chance of participation in equity with attractive low tax benefits exists for a top level Sales Manager with the experience and initiative to make a viable contribution. A company car, attractive salary and usual business expenses will be provided. We seek an early start to close immediately available business opportunities. Some European travel will be involved, but very small. A Midlands home commitment is essential as an important Head Office Group member. An excellent opportunity for an experienced Terminal Systems Sales Manager to accrue a top level reward and ground floor career opportunity.
Telephone Bob Tait for discussion and interview date.

Please write enclosing details to: John Wood or Bob Tait

TRADEWINNER SYSTEMS LIMITED

Aston Science Park, Love Lane, Birmingham B7 4BJ. Or telephone 021-359 0854

(7202)

Computer Professionals

Analysts, Progs. & Comms Specialists
Saudi Arabia — Various Locations
£17 to £30K

Married status and school fees available with some posts for people with 3 to 7 years experience of large IBM mainframes. BANKING, SCIENTIFIC/CONSTRUCTION, COMMERCIAL. Recent involvement with PL-1 TSO/SPF JCL IMS DB/DC Fortran IV MVS/JES 2 would be of interest.
We also have vacancies for Perkin Elmer 3200 and HP3000 Programmers and Analysts. Ref. 1901/A

Real Time Applications
Surrey Border **up to £17K**

This systems house is seeking computer professionals capable of responding to a variety of technical challenges. Ambitious Analyst/Programmers with a degree and three years' experience of defence, information or industrial real-time applications would be of great interest. Familiarity with Assembler or real-time/mathematical languages is desirable. Ref. 1901/B

Product Support Specialists for Micro Systems
Thames Valley & WC1 **£12K+**

New Products coming from Established Companies seeking experience of IBM PC or Sirius type systems to support their growing Dealer and large OEM customer base. New positions in expanding organisations with great potential for ambitious applicants. Ref. 1901/C

Electronics Engineers
Surrey **Up to £13.5K**

Vacancies exist for candidates with a qualification in electronics and at least two years' software development experience to work on complex defence systems. Microprocessor and CORAL or PASCAL experience advantageous. Excellent benefits and relocation offered. Ref. 1901/D

Sales Executives
WC1 & Thames Valley
£10K base, £25K OTE + Car

Dealer and OEM Sales experience needed with Micro Business Systems or similar products. Emphasis is on knowledge of Dealership networks, including selection and appraisal, in the Midlands and South. Ref. 1901/E

Finance Consultants/Project Leaders
Surrey Border/London **£14-£18K**

If you have sound experience of IBM, DEC or Tandem hardware gained within a banking and/or money market and commodity broking environment, this is an excellent opportunity to make that first move to a top consultancy, or a move to a better one. An out-going personality, coupled with a flexible attitude, is essential. Ref. 1901/F

Maths/Defence Systems
Central and West London **£14K**

Mathematicians are needed with skills in modelling, simulation, operational analysis or Artificial Intelligence. Defence Project leader experience or capability is required. Both our clients offer excellent career opportunities and relocation if appropriate. Ref. 1901/G

Analyst Programmers
London/Overseas **Up to £12.5K**

Systems house with world wide client base needs Hewlett Packard experts to work on bespoke versions of complex order processing software. Specification and implementation can be overseas – development in London. A minimum of 3 years experience, at least two on HP3000 is needed for these positions. Ref. 1901/H

Micro S/W Development
Herts **£10K + Car**

A vacancy exists for an Assembler programmer with a minimum of two years experience to join a software house developing microprocessor based POS products. Well-proven software design skills together with the ability to communicate at all levels is essential. Ref. 1901/J

Systems Designers (S'ware & H'ware)
London, Swindon & Maidenhead £12-£15K

We are looking for candidates with knowledge of Operating Systems including CP/M, MP/M, UNIX and relevant Assembler and high level languages plus LANs. Experience of market requirements, new product design, office technology and communications. Project Leader potential required. Ref. 1901/K

Communications/Electronic Warfare
Berks and Herts **£11-£17K**

Electronics and/or programming skills with, for some candidates, project leading experience, are needed for both civil and military systems work.. Multi micro configurations are used for one system which involves Data Communications. Design of distributed databases and Coral programming background would also be relevant. Degree level candidates should be capable of technical innovation. Ref. 1901/L

Database Consultants
Central London **£15-£20K**

Two challenging posts in a consultancy are available for candidates who can demonstrate their ability to act as technical consultants to design projects. At least five years database specialisation spread over more than one host computer system is needed. Dynamic personality with good client skills is also a required attribute. Ref. 1901/M

Banking Systems
London/Herts Border **c£17K**

This systems house specialises in transaction processing technology and has designed and installed a number of sophisticated switched networks, mainly in the financial sector. They are seeking a high calibre professional with sound banking experience. Knowledge of Tandem equipment would be viewed with extreme interest but otherwise full training will be provided. Ref. 1901/N

IBM GSD
Analysts and Programmers
London/Berks/Surrey **£10K upwards**

RPG programming skills are required for several vacancies in the locations indicated above. Analysis experience is needed for some posts and at senior levels knowledge of MAAPICS or COPICS could lead to consultancy level appointments for candidates who have led projects and who possess the necessary personal qualities. Ref. 1901

(7342)

Isobel Bruce or David Futcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

Recruitment consultants Licence No SE 8783

Communications Technologists

Central London or Harlow (Essex)

British Petroleum's Telecommunications Division is responsible for the implementation and operation of national and international communications systems and networks incorporating data, voice, image and message technologies. Our London and Harlow computing centres are looking for communications technologists to implement and support a complex, state-of-the-art, packet switching network as well as more conventional communications.

Applicants, preferably in their twenties, must have either an HNC/HND in telecommunications or City and Guilds full technical qualifications or the equivalent, together with 4-6 years' telecommunications experience.

We offer a competitive salary supported by a substantial range of benefits including non-contributory pension scheme, subsidised luncheon club and first-class sporting/leisure facilities.

Please write or telephone for an application form to:

Mrs J. E. S. Wilkerson,
Recruitment and Placement Branch,
The British Petroleum Company plc,
Britannic House, Moor Lane, London EC2Y 9BU.
Tel: 01-920 3484

The British Petroleum Company p.l.c.

The IBM SYSTEM 34/36/38 Recruitment Specialists

SNR ANALYST PROGRAMMER/DPM

for a new

IBM SYS/36 site in Cambridge

c£14,000 + benefits

+ very generous relocation expenses where appropriate

MY CLIENT: Is an International Company providing a range of services to the petroleum industry to aid in the drilling, completion and production of oil-wells. Part of a multi-national organisation, their expertise is used in over 75 countries to locate and produce oil on and off-shore. A Research centre is now being established in Cambridge including a new IBM SYS/36 installation.

THE VACANCY: Needs the talents of a multi-disciplined professional who would like to use their ability in developing financial and accounting systems. The successful applicant will be responsible for the day to day running of the installation within a high level research team environment. The position requires total dedication, versatility and is an exceptional opportunity to the career professional.

THE PROSPECTS: Within the group both short term and long term are excellent with very good promotional prospects. Every chance will be given to develop your technical skills enabling you to advance your career.

TO APPLY: Please call Richard Milsum on 01-354 1055 during office hours or on 01-958 2553 during evenings and weekends. Response will be treated with strict confidence.

MARCH COMPUTER RECRUITMENT LTD
1 NOEL ROAD, LONDON N1 8HQ
01-354 1055

Team Leaders · Senior Engineers · Electronics Engineers & Real-Time Software Specialists

Our investment in communications will...

Make 1984 the year you joined one of our small teams of multi-disciplined Engineers at New Southgate. There you'll be working in a stimulating environment alongside highly skilled professionals with a mission to take up the challenge of tomorrow's communications systems and expand our business in the highly competitive UK and overseas markets.

We are currently involved in several of the most interesting telecommunications projects of the future which must inevitably evolve into fully integrated information delivery systems optimised for both voice and data. Among these STC's new digital telephone switching system, already of proven international performance, is now undergoing extensive UK software design, development and adaptive engineering.

While the course of the Information Revolution can be defined in broad contours, it cannot be predicted in detail. Whatever predictions are made today are bound to be overtaken by accelerating technology and shifting demand. What is predictable however, is the need for a number of key men and women to join us in a variety of functions:

...take your career into the 21st century now...

SYSTEMS DESIGN
Team Leaders — Systems Engineers
SYSTEM DEVELOPMENT SUPPORT
Team Leaders — Software Designers — Programmers — VAX/IBM Software Support Tools Development
SOFTWARE SYSTEM INTEGRATION
Team Leaders — Database Administrators — Software System Builders
MICROPROCESSOR APPLICATIONS
Analogue/Digital Interface Designers (Intel 8086)
EXPERT SYSTEM DESIGN
Section Head — Knowledge Engineers
ADVANCED TEST DEVELOPMENT
Senior Engineers — Hardware/Software

In all cases, we are looking for ambitious and committed Engineers who are qualified to Degree level or equivalent and can add to the depth of experience within our existing professional teams.

This is your opportunity to make a major contribution to projects capable of transforming the field of voice and data communications. In consequence, we are offering salary packages designed to attract the best people. Generous assistance with relocation expenses is available as appropriate.

...Switch to STC.

Take the most important step in your career by telephoning us on 01-368 1234 and asking for Vaughan Hartridge on ext. 2215 or Roger Edmonds-Brown on ext. 2579.

Alternatively, phone Vaughan Hartridge on St. Albans (0727) 60043 or Roger Edmonds-Brown on 01-361 2931 on any weekday evening (between 8-10pm) or Saturday or Sunday morning. If you prefer, write with full details of your experience to: Vaughan Hartridge, The Recruitment Centre, STC Telecommunications Limited, Oakleigh Road South, New Southgate, London N11 1HB.

Developing tomorrow's communications technology

STC TELECOMMUNICATIONS

Telecomputing

Software Designers Analyst/Programmers & Programmers for our Software Development Team and Online Project Teams

The Company

Telecomputing has, over the last ten years, established an enviable reputation as a leading independent software house. Our main product, TPS, is used at 450 installations around the world. TPS provides a complete transaction processing environment which is unique in the facilities and portability it offers to its users.

Another very important part of the Telecomputing operation is our Client Services division. This provides consultancy, design and programming services to our customer base. We specialise in turnkey projects providing first class systems on time and on cost.

Telecomputing is now recruiting more people to help us achieve our exciting objectives. We need designers and software programmers to give us the extra capacity to produce the software products that are needed to overcome the applications backlog and allow our users to realise the full potential of their hardware.

Our client services team is experiencing unprecedented demand for its resources, so we need more people capable of designing and producing the excellent systems which are the foundation upon which we have built our success.

The Requirements

Software Designers: we need people capable of making an original contribution to the design of our new products. Previous experience of software design is desirable but not essential. Knowledge of any of the following areas would be relevant: Applications generators, relational database, IKBS, MMI, DSS.

Development Programmers: we require career programmers, preferably with experience of assembler level programming, but if not good experience of a BCPL like language (C, PASCAL, S3) is essential. Based in Oxford the jobs are in a team where all individuals must be able to solve problems and program their solutions.

Consultants/Analyst Programmers: Based in Oxford or London we require people with experience in On-line systems with a mainframe COBOL programming background (ideally IBM or ICL) who are capable of designing and leading a team to produce innovative systems to commercial timescales.

Programmers: Based in Oxford or London these people must have at least two years' IBM or ICL COBOL experience preferably in an on-line environment. Much of our work is carried out on clients' sites so a willingness to work away from home is essential.

The Rewards

Salaries are highly competitive as you would expect from a leading software house.

The company actively encourages career development and provides an exciting range of opportunities for people who can accept a challenge.

Our new Oxford offices provide first class working conditions and our development hardware which comprises ICL ME29, 2965 and IBM 4331 ensures the right resources for producing software to schedule.

STOP PRESS

Trainee Programmers: Must have had some experience of COBOL programming. Based in our Manchester office, preference will be given to local applicants who will not object to long periods working on client sites away from home.

The Next Step

Is to telephone or write to:
Terry Kirk
Telecomputing plc
244 Barns Road
Oxford OX4 3RW
(0865) 777755

(7288)

Telecomputing

SOFTWARE EVALUATION & HARDWARE PROCUREMENT

Have you the talent to command £14,500 p.a.

British Telecom are now in the market for a number of essential talents to work in London. We are looking for a heavyweight Software Analyst together with a support team of ICL 2900 experts plus other professionals with specific experience of datacom systems assessment. All will play a vital, pivotal role — analysing, recommending, ordering and installing hardware and software. When we reveal that a typical project involves 100 different sites, you get some dimension of the size, scope and sheer technical challenge of this assignment.

Take a closer look ...

SENIOR SOFTWARE AND HARDWARE ASSESSOR

An expert in programming (essentially COBOL) who also possesses a wealth of IBM and ICL mainframe experience. A genuine, hard-nosed professional who can assess software performance and hardware specifications against stringent BT benchmarks. A true manager who can confidently liaise with manufacturers and users alike. Above all, an agile intellect who can weigh up the merits of every potential product and then make mature, incisive judgements.

If you have the essential experience and technical reporting skills we're offering up to £14,500 now ... and prospects of considerably more.

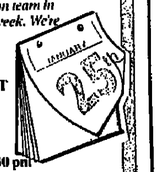
HARDWARE & DATACOM ANALYST

Slightly younger professionals — in their early to mid twenties range — with surprisingly mature manners. People with a genuine fascination for computers and powerful grip on all the latest hardware developments. We are particularly interested in meeting people with two very specific areas of experience. Some will have a detailed knowledge of ICL 2900's, others will specialise in network design, Modem, Multiplexer and datacom systems procurement.

If you have the right technical and reporting talents, the salary could be up to £12,000.

Find out more!

Ring us now and meet BT's Hardware and Software Evaluation team in Central London next week. We're booking into....



THE CAFÉ ROYAL
68 REGENT STREET
London W1
Fifth Floor
George Suite

Between 5.30 and 8.30 pm

So make a date... put yourself in line for a £14.5K salary!

Call Michelle Priestley, right away on Freefone 2593 or direct on 01-432 9357 quoting reference CW

If you really can't make this date and would still like to put yourself in the running, ring us today for further details.

Data Processing Executive British Telecom

Analysts/Senior Analysts Salaries to £12,000

We are a highly successful organisation, with substantial reserves and able to demonstrate considerable growth within our industry.

An integral part of our success to date is due to the effective use of computer technology throughout the Organisation and a firm financial commitment to expand this activity which will include the introduction of the latest sophisticated systems to further improve our efficiency.

Senior Systems Analyst c £12,000

You will have total responsibility for a team of Analysts engaged in the development of systems for a specific user area combined with day-to-day supervision and control of projects. You should have successfully completed at least one major project from inception to implementation, have project management experience combined with excellent interpersonal skills necessary to report at all levels within the Organisation.

You should have a minimum of [illegible] mainframe environment and experience of [illegible]

Systems Analyst c £11,000

Working within a structured environment [illegible] demonstrate professional approach to [illegible] role of [illegible]

"An opportunity to express and enhance your skills in an advanced environment committed to new technology"

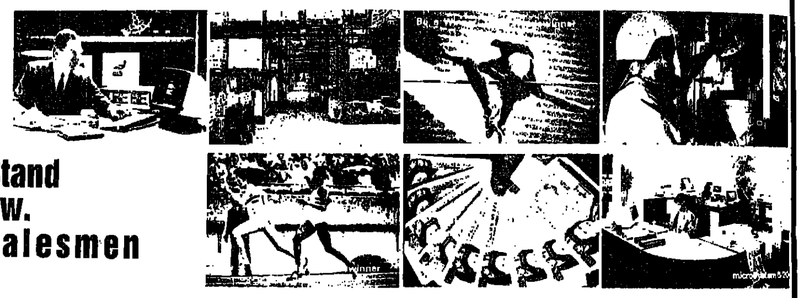
West Midlands

Would you like to join a Winning Team?

Top Salaries — Top Sales Commissions — Top Systems & Programming Salaries

Pick the Job For You — Up to £50,000!!!!

Honeywell & ICL clients



The best Minis in the UK.
Top New Micros.
Customer enquiries unrivalled anywhere.
The Top System Builder Stand at Which Computer? Show.
Sales Managers & Salesmen to £50,000 pa.
Project Leaders and Managers to £14,000 pa.
Analyst Programmers to £10,000 plus early promotion.
Our clients include Manufacturers — Distributors, Stockists, Oil Companies, Vehicle Leasing etc, etc, etc.

SALES MANAGERS AND SALESMEN
— UP TO £50,000 EARNINGS CAPABILITY

We are inundated with top quality leads and serious business opportunities As such, we urgently seek a number of experienced Business Systems salesmen, with a proven, demonstrable track record of closing business, to join our rapidly expanding company as a Public company subsidiary.

Tradewinner offer a wide variety of Package and Custom built software running under Honeywell and ICL equipment. Negotiations are also in progress with a number of leading micro manufacturers. We seek candidates with the ability to product demonstrate, undertake initial feasibility studies, prepare a high quality tender, supported by a first class Systems Design team, and present an effective business case at Board level.

Excellent graphic aids are available. Equally, a first class reference base is already established throughout the entire UK. We are flooded with sales enquiries and actively market to provide top business opportunities for our companies. Outstanding opportunities exist for all categories of proven sales staff with early Board prospects for senior top performers. Equally, for developing salesmen, with the professionalism and commitment, opportunities to triple your earnings are uniquely available via Tradewinner. Either apply immediately for Birmingham interview, or visit us on the stand at the Which Computer? Show. If you've got the ability, we've got the quality of leads you've never seen before. At present we've got Project Managers sizing up c. £260,000 worth of business p.a., so what could you, as a 'Professional Salesman?', sign up. Sell Honeywell, ICL and other manufacturers Turnkey products.
Contact John Wood or Bob Tait for early interview.

MANAGERS — SALES SUPPORT
£12,500 plus car & bonus

Have you worked with software products?
Do you know your products technically?
Have you had experience in the following:
- Sales Order Processing
- Stock Control
- Purchase Order Processing
- Ledgers
- Payroll
- Vehicle Leasing?

Have you worked in the computing industry for at least seven years, in at least two different environments?
Have you used Honeywell or ICL equipment?
Do you want to work with a successful company?
Do you want to create further success?
Do you want to satisfy clients' business needs?
Do you want to lead others?
Do you want to work with clients and potential clients?
Do you want to be in control of your own rewards?
Do you want a company car?
Do you want to be ahead of the opposition?

If you can answer YES to most of these questions, then we would like to meet you — SOON! Contact us — NOW. John Wood or Bob Tait.

ANALYST/PROGRAMMERS
£6,000 to £10,000

Have you had at least three years' programming experience?
Have you had COBOL experience?
Do you know about Sales Order Processing
- Stock Control
- Purchase Order Processing Ledgers?

Have you used Honeywell or ICL equipment?
Are you eager to develop new skills?
Do you want to broaden your horizons?
Do you want technical challenge?
Do you want contact with your clients?
Can you meet your own committed timescales?
Do you enjoy working in a professional environment?
Do you want the rewards that you think you deserve?

If you have answered YES to most of these questions, then we have got a lot to offer each other. Contact us, NOW
Bob Tait or Jeff Forrester

MANAGERS IMPLEMENTATION
£12,000 upwards plus car

Have you had at least seven years' experience in the computing industry?
Have you had experience in the following:
- Sales Order Processing
- Stock Control
- Purchase Order Processing
- Ledgers
- Payroll
- Vehicle Leasing?

Have you used Honeywell or ICL equipment?
Have you had COBOL programming experience, system analysis, and design experience?
Have you worked with software products before?
Do you enjoy solving problems?
Do you enjoy working with clients?
Do you think that computer systems are tools to be used to satisfy business needs?
Do you want to do feasibility studies for clients?
Do you think that ongoing support for a client is important?
Do you want to take an important role in satisfying current client needs, and in generating future business?
Do you want to lead others?
Do you want to receive the rewards that you think you deserve?
Do you want a company car?
Do you want a secure future?

If you have answered YES to most of these questions, we ought to be talking to each other. Contact us — NOW.
Bob Tait or Geoff Caine.

PROJECT LEADERS/MANAGERS
10K to 14K Car at Senior Level

We are seeking experienced Systems Designers/Investigators capable of undertaking an extensive number of feasibility studies in a pre-sales support role, through to Analysing and Designing Systems, right through to team control in a development role and Systems implementation at client sites.

A considerable number of packages are already used so ability to rapidly understand the features and facilities of the varying systems ranging from Order Processing, through Stock Control into BOMP, Purchasing, Ledgers, etc. would be a distinct advantage. An understanding of Cobol is mandatory, as is some demonstrable career experience of having spent at least two years programming.

Ability to communicate professionally with users is very important. Equally so, the ability to project plan and to work within committed time scales. We in turn offer attractive working conditions, good salaries, excellent career progression opportunities, and the opportunities of share investment in our own Public Group.

All candidates must be resident or prepared to become resident within the Midlands, working from our Central Birmingham base at the Aston Science Park. Excellent positions. Excellent careers but with preference for the top 20% of the industry is capability, initiative and motivation. If you feel you have the ability, but would like the scope to develop, call Tradewinner, or visit us at the Which Computer? Show, January 17th-20th.

For interview at our Data Centre call Bob Tait or Geoff Caine.

SALES MANAGER
TERMINAL PRODUCTS — UK COVERAGE — MIDLANDS BASED
ATTRACTIVE PACKAGE + COMMISSION

We seek an experienced Video Terminal Sales Executive capable of assisting in the development of a new venture as a Group subsidiary. We have an exciting product generating considerable interest, especially in the 132 character screen capability. We need a senior Sales Executive with a sound knowledge of protocols, able to assist and advise our American partner company, and able to assist with Datascope interpretations. We have a very large potential customer base to penetrate and enquiries already for over 1,000 units as a target market with our ultimate UK market alone of over 5,000 units.

We have the product, with top company account interest already generated from over 40 sites with 5 test sites installed and working. A knowledge of Honeywell and ICL protocols could be advantageous but not essential. The ability to sell direct to interested clients, negotiate and tender to large accounts, and to build a small, top quality sales team, will be essential to gain this position. A serious later Directorship opportunity exists in a Public company subsidiary, and a chance of participation in equity with attractive low tax benefits exists for a top level Sales Manager with the experience and initiative to make a viable contribution. A company car, attractive salary and usual business expenses will be provided. We seek an early start to close immediately available business opportunities. Some European travel will be involved, but very small. A Midlands home commitment is essential as an important Head Office Group member. An excellent opportunity for an experienced Terminal Systems Sales Manager to accrue a top level reward and ground floor career opportunity.
Telephone Bob Tait for discussion and interview date.

Please write enclosing details to: John Wood or Bob Tait

TRADEWINNER SYSTEMS LIMITED
Aston Science Park, Love Lane, Birmingham B7 4BJ. Or telephone 021-359 0854

(12021)

Computer Professionals

Analysts, Progs. & Comms Specialists
Saudi Arabia — Various Locations
£17 to £30K
Married status and school fees available with some posts for people with 3 to 7 years experience of large IBM mainframes. BANKING, SCIENTIFIC/CONSTRUCTION, COMMERCIAL. Recent involvement with PL-1 TSO/SPF JCL IMS DB/DC Fortran IV MVS/JES 2 would be of interest.
We also have vacancies for Perkin Elmer 3200 and HP3000 Programmers and Analysts. Ref. 1901/A

Real Time Applications
Surrey Border **up to £17K**
This systems house is seeking computer professionals capable of responding to a variety of technical challenges. Ambitious Analyst/Programmers with a degree and three years' experience of defence, information or industrial real-time applications would be of great interest. Familiarity with Assembler or real-time/mathematical languages is desirable. Ref. 1901/B

Product Support Specialists for Micro Systems
Thames Valley & WC1 **£12K+**
New Products coming from Established Companies seeking experience of IBM PC or Sirius type systems to support their growing Dealer and large OEM customer base. New positions in expanding organisations with great potential for ambitious applicants. Ref. 1901/C

Electronics Engineers
Surrey **Up to £13.5K**
Vacancies exist for candidates with a qualification in electronics and at least two years' software development experience to work on complex defence systems. Microprocessor and CORAL or PASCAL experience advantageous. Excellent benefits and relocation offered. Ref. 1901/D

Sales Executives
WC1 & Thames Valley
£10K base, £25K OTE + Car
Dealer and OEM Sales experience needed with Micro Business Systems or similar products. Emphasis is on knowledge of Dealership networks, including selection and appraisal, in the Midlands and South. Ref. 1901/E

Finance Consultants/Project Leaders
Surrey Border/London **£14-£18K**
If you have sound experience of IBM, DEC or Tandem hardware gained within a banking and/or money market and commodity broking environment, this is an excellent opportunity to make that first move to a top consultancy, or a move to a better one. An out-going personality, coupled with a flexible attitude, is essential. Ref. 1901/F

Maths/Defence Systems
Central and West London **£14K**
Mathematicians are needed with skills in modelling, simulation, operational analysis or Artificial Intelligence. Defence Project leader experience or capability is required. Both our clients offer excellent career opportunities and relocation if appropriate. Ref. 1901/G

Analyst Programmers
London/Overseas **Up to £12.5K**
Systems house with world wide client base needs Hewlett Packard experts to work on bespoke versions of complex order processing software. Specification and implementation can be overseas — development in London. A minimum of 3 years experience, at least two on HP3000 is needed for these positions. Ref. 1901/H

Micro S/W Development
Herts **£10K + Car**
A vacancy exists for an Assembler programmer with a minimum of two years experience to join a software house developing microprocessor based POS products. Well-proven software design skills together with the ability to communicate at all levels is essential. Ref. 1901/J

Systems Designers (S'ware & H'ware)
London, Swindon & Maidenhead £12-£15K
We are looking for candidates with knowledge of Operating Systems including CP/M, MP/M, UNIX and relevant Assembler and high level languages plus LANs. Experience of market requirements, new product design, office technology and communications. Project Leader potential required. Ref. 1901/K

Communications/Electronic Warfare
Berks and Herts **£11-£17K**
Electronics and/or programming skills with, for some candidates, project leading experience, are needed for both civil and military systems work. Multi micro configurations are used for one system which involves Data Communications. Design of distributed databases and Coral programming background would also be relevant. Degree level candidates should be capable of technical innovation. Ref. 1901/L

Database Consultants
Central London **£15-£20K**
Two challenging posts in a consultancy are available for candidates who can demonstrate their ability to act as technical consultants to design projects. At least five years database specialisation spread over more than one host computer system is needed. Dynamic personality with good client skills is also a required attribute. Ref. 1901/M

Banking Systems
London/Herts Border **c£17K**
This systems house specialises in transaction processing technology and has designed and installed a number of sophisticated switched networks, mainly in the financial sector. They are seeking a high calibre professional with sound banking experience. Knowledge of Tandem equipment would be viewed with extreme interest but otherwise full training will be provided. Ref. 1901/N

IBM GSD
Analysts and Programmers
London/Berks/Surrey **£10K upwards**
RPG programming skills are required for several vacancies in the locations indicated above. Analysis experience is needed for some posts and at senior levels knowledge of MAAPICS or COPICS could lead to consultancy level appointments for candidates who have led projects and who possess the necessary personal qualities. Ref. 1901

(7342)

Isobel Bruce or David Futcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

Recruitment consultants Licence No SE 6708

Communications Technologists

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Mrs J. E. S. Wilkerson,
Recruitment and Placement Branch,
The British Petroleum Company plc,
Britannic House, Moor Lane, London EC2Y 9BU.
Tel: 01-920 3484

The British Petroleum Company p.l.c.

The IBM SYSTEM34/36/38 Recruitment Specialists

SNR ANALYST PROGRAMMER/DPM

for a new

IBM SYS/36 site in Cambridge

c£14,000 + benefits

+ very generous relocation expenses where appropriate

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MARCH COMPUTER RECRUITMENT LTD
1 NOEL ROAD, LONDON N1 8HQ
01-354 1055

SYSTEMS ANALYSTS C. LONDON — **To £13,000**

This well known company is undergoing considerable expansion of its DP department and requires Analysts at various levels of experience. A minimum of one year's formal analysis gained in a commercial environment is required. Preference will be given to those with accounting application backgrounds. There will be a good deal of contact with management departments and candidates must therefore be professional in both appearance and attitude.

SYSTEMS MANAGERS H'WELL L6+BCL — **c.£11,000**

Two clients seek good Analyst/Programmers who wish to move into managerial positions. Firstly a company based in N. London is shortly to install a BCL MOLECULAR 18 and requires a person with experience of ASSEMBLER or similar language. Secondly, a site based in Bucks. with a HONEYWELL L6 seeks either COBOL or SCREENWRITE experience. Applicants should be able to work on their own initiative and preferably has some client/user contact experience.

PROGRAMMERS MINI COMPUTERS — **c.£8,500**

A number of Clients currently require Programmers with a minimum of a year's experience in COBOL, FORTRAN or PASCAL. This will have been gained on any mini however special interest will be shown in those with knowledge of DEC VAX, PRIME, HP 1000 or GOULD SEL. Applicants should have a good educational background and be smart and ambitious. Most work will be in C. London with the occasional visit to client sites.

DEVELOPMENT DEC/COBOL — **To £16,000**

Continuing growth opens further S&P opportunities, with this nationally renowned Middx. based company. Utilizing VAX and PDP equipment for their advanced on-line systems development they require Programmers or Analyst/Progs. with two to three years' COBOL preferably gained in a VAX environment. At Team Leader level they seek a Senior Analyst with proven project design through implementation experience and good DEC systems exposure. A comprehensive benefits package is offered, to include bonus, relocation and with many positions a company car.

ALL LEVELS ICL/VME — **To £16,000**

An expanding Essex based company, committed to major financial systems development on ICL 2900 VME systems is seeking experienced ICL people at all levels. Progs. and Analyst/Progs. should have 18 months or more COBOL, the latter with some formal analysis. Analysts and above will have at least two years' systems exposure. Excellent salaries and prospects are augmented by a generous benefits package which includes a good bonus scheme.

PROJECT MANAGERS COMMS/BANKING — **To £18,000**

Two City-based Clients with heavy international commitments require Project Managers in the Banking and Communication areas. They seek in depth experience in either application area with micro experience especially relevant for the Comms. position. Basic salaries will be greatly enhanced by valuable and extensive benefits packages.

APPS SYST/PROGRAMMERS DATABASIC — **£10,000**

A rapidly expanding software house is currently recruiting Analyst/Programmers with a minimum of 18 months DATABASIC from a Prime or CMC environment. The client actively encourages employees to service customers in a consultancy role therefore applicants should be presentable, confident and have the ability to deal with first time users. The client can offer job satisfaction, regular salary reviews and intensive training.

ANALYST/PROGRAMMER RPGII/III — **£10,500**

An international bank has identified a requirement for an Analyst/Programmer with a solid GSD background. The bank is an established 38 user but is quite prepared to consider two years' RPGII programming and will retrain to RPGIII. The department is fairly small and everyone is encouraged to have as much user contact as possible. As well as a good starting salary the client will offer a banking package to include a 5% mortgage.

PROGRAMMERS PL1 — **To £11,500**

A company offering a range of financial services has several requirements for PL1 programmers. The minimum requirement is for 18 months PL1 in a commercial environment for the programming positions and up to four years' plus for the senior posts. Applicants should have good all round programming skills to include design, coding and implementation. Due to the size of the client there is a recognised career path which would lead through to systems if desired.

(71511)

404 4821

Apex Computer Recruitment Ltd.

London Office: 59 Grays Inn Road, London WC1X 8TL. Tel: 01-404 4821.
Brussels Office: Rue Gatti de Gamond, 24. Uccle 1180 Brussels. Tel: 010 322 377 4193.

Communications Consultants

£16,000-£23,000 plus car

Berks/Middx — **Plus Relocation**

Our client is a growing and very exclusive consultancy specialising in advanced telecommunications and electronic office systems. Their assignments are in both public and private sectors and include the top organisations in finance, oil, electronics, manufacturing, public utilities and Government.

They provide a totally comprehensive service on the full range of Information Technology from stategic studies to installation and their policy of employing only the very best specialists as consultants has secured them a highly prestigious reputation within the industry and amongst their clients.

Headed by one of its best known professionals in computing, the company is securely established financially with a five year development plan which is backed by significant funding and resources, enabling them to pursue their policy of excellence and innovation which has already established them as a leading communications consultancy.

They now seek a small number of top level communications professionals with practical expertise at both technical and project management levels with particular emphasis on PABX systems.

There is an unusual opportunity for the more experienced and senior consultant to develop a business sector which could soon lead to the running of an autonomous subsidiary company within the group.

The company encourages individual responsibility at all levels and the informal structure allows all consultants access to Directors at any time.

Applicants will work in London or the Home Counties with opportunities to participate in European assignments, and must have a strong background in the evaluation and installation of PABX systems.

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As part of their expansion programme Langton require individuals with experience of training in publishing or software products preferably within an IBM or DEC environment. Reporting to the Training Manager you will be responsible for training customers in a variety of software products. The positions will require travel in Europe and potentially North America therefore foreign languages will be advantageous.

TECHNICAL SUPPORT ANALYST to £14,000 + OVERSEAS TRAVEL

Duties include installation and support of electronic publishing software products as well as trouble shooting on customer sites. There will be some travel in Europe and potentially North America. It is envisaged that opportunities will be created for the right person to eventually move into systems programming. Eighteen months development or support experience in an IBM VM or DEC VAX environment is essential.

TECHNICAL SUPPORT PROGRAMMER to £14,000

Responsibilities cover enhancing and maintaining software products including converting software to run on different computers and building a software tools environment for text and graphics processing. You should have two years experience in development or maintenance with a liking for thoroughness and the solving of complex problems. An understanding of IBM VM or DEC VAX Fortran is essential.

CUSTOMER SUPPORT ANALYSTS to £12,000

These are key positions reporting to the Product Support Manager. Responsibilities include supporting customers using electronic publishing software, pre sales and post sales support, manning of a hot line enquiry service, and setting up and running of demonstrations. Ideally you will have 2 years plus software development or support experience with a knowledge of either IBM or DEC. An understanding of the Xerox 9700 Laser printer or facsimile systems would be an advantage.

For an informal discussion regarding these opportunities please telephone Miles Richards on 01-938 1804 (24 hours) or 01-847 2385 (7pm-9pm).

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Systems Consultants

London: Salaries to £20k

Having just won a series of major contracts, the Consultancy Division of a large systems and Software House has a number of vacancies for Senior Systems Consultants who will be expected to spearhead their growth during the next few years. All applicants are required to possess at least one degree and have a minimum of five years' computing experience, preferably gained in a large user or systems house environment. Awareness of development in the fields of office automation and the telecommunications industry is of special interest to our clients, as is a willingness to be involved with marketing activities, including the development of new business. These challenging roles will appeal to ambitious, aggressive individuals who wish to remain at the forefront of technical developments. Ref: L/D/A

PASCAL & UNIX

S.W. London: Salaries to £13k

A highly respected supplier of UNIX-based Microcomputer systems and Accounting Packages wishes to recruit a number of exceptional **Applications Programmers** and **Systems Designers.** Applicants, aged 24-32 years must have a minimum of four years' relevant practical experience in a UNIX, CP/M or financial accounting environment. Your programming background must include fluency in two or more of PASCAL, 'C', Level II COBOL or Business BASIC. Those candidates fully familiar with U.K. accounting practice and also having a current background in systems design-analysis are especially encouraged to apply. Certain positions will entail a significant degree of client contact in the form of product demonstration seminars and on-site client training, consequently our clients value well-developed interpersonal skills. Ref: L/P/B

FORTRAN Programmers

London: Salaries to £12k

A leading international Systems Company specialising in the development and sale of communications software is seeking **Programmers** and **Designers** for its Central London headquarters. Suitable candidates should hold a numerate degree and have two years' subsequent programming or systems design involvement. Fluency in FORTRAN is essential and it is preferable to have had exposure to either a PDP 11/RSX-11M or VAX/VMS configuration. Candidates who are fluent in a foreign language especially French or German will be of particular interest to our client. A degree of mobility is necessary since most positions involve both European and Transatlantic travel. Ref: L/D/C

CAD/CAM Sales Support

East Midlands: Salaries to £14k

Our clients have recently negotiated an exclusive distribution agreement with a leading U.S. supplier of 32 bit based CAD/CAM systems. The company has an immediate agreement for **CAD/CAM Sales Support Personnel** primarily to be based in its East Midlands headquarters although a number of positions will shortly be available in London. You must be a highly competent FORTRAN Programmer with a background in manufacturing industry. Of particular interest will be those who have post-pro cessor or GNC software expertise. Since you will be expected to offer in-depth technical support to new users, good interpersonal communication skills and mobility are essential. On appointment, all employees will receive extensive product training and thereafter on a site-monthly basis. Ref: L/I/D

Comms S/W Development

Sussex Coast: Salaries to £15k

Our client, a major supplier of communications systems, with a well-deserved reputation for innovation, are recruiting a large number of **Communications Software Specialists** for their development facility, based in the South Downs. They are especially interested in applicants with programming skills in any block structured or assembly language, particularly if they have developed programs to run on a UNIX-based system. Their current areas of activity include office automation, military command and control and cellular radio systems. Whilst they would be particularly interested in applications from those with experience in any of the above areas, general real-time experience is also very much of interest. Ref: L/I/E

Real-Time Designers

Herts/Beds: Salaries to £14k

The systems group of a leading computer manufacturer has a number of vacancies for **Real-Time Programmers and Designers.** All applicants should be educated to BSc standard and have at least 18 months' experience within a real-time scientific minicomputer or microprocessor environment. Programming languages should include fluency in Assembler and one or more of PASCAL, C, BCPL or CORAL 66. Successful candidates will join project teams involved in the design and development of communications products. Consequently, if you are familiar with X25 protocolling techniques, ISO standards or local/wide area networks, then you will be of particular interest to our client. Ref: L/D/F

Industrial Automation

Central London: Salaries to £16k

The Industrial Division of a leading Systems and Software House has recently won a number of major contracts and is, therefore, seeking additional **Programmers and Consultants.** Ideally, applicants should be graduates who have at least 12 months' programming experience in a real-time minicomputer environment using PASCAL, FORTRAN or COBOL. Knowledge of DEC VAX or HP1000 would be an advantage, but is not essential, since our client will provide in-house training. For the more senior positions, you will be expected to have significant experience in software system design and/or project leading in the areas of plant control (warehousing, materials handling, process control), distributed control (wide area networks, automated retailing systems, etc.) or software technology (Comms eg X25 and ISO standards). Ref: L/I/G

Simulation Systems

Thames Valley : Salaries to £13k

A long established Engineering Systems Supplier based in the Thames Valley has an immediate requirement for additional FORTRAN **Programmers** and **Simulation Engineers.** You should hold at least one numerate degree and be aged 23-30 years. Whilst the Company's software products are machine portable there is some preference for candidates who have programmed in a PDP/VAX, Prime, HP or GEC environment. Of greater importance are those who have very recent or current software design and applications programming experience with one or more of: guided weapons and missile control systems, LSI and hybrid circuit design, simulation and modelling of ballistic dynamic systems. Ref: L/I/H

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TECHNICAL

LOGSYS Advanced Systems provides systems design, programming, and project implementation services to the industrial and scientific and defence community. Most projects are real-time mini or micro computer systems with a relatively large or complex software content. Our services are provided by high calibre software staff, about half of whom work on site at client's premises, whilst the others are based at our research and development centre which is shortly moving into new premises in Wokingham.

As a result of the high demand for our services we now need the following additional staff:–

VAX SYSTEMS PROGRAMMERS (2) to £14,000

1 position in Portsmouth, 1 in Farnborough, Hants. VMS, FORTRAN, CORAL and MACRO essential. Database experience and RSX an advantage.

PROGRAMMERS/SOFTWARE ENGINEERS (6) to £13,000

Portsmouth. Design and development of state-of-the-art real-time Defence systems. CORAL essential, MASCOT desirable.

COMMUNICATIONS SPECIALIST (1) to £14,000

Wokingham. TELETEX, X25, Local Area Network, PASCAL, 16-bit micro and Assembler experience desirable.

The company is continually in the forefront of advanced technology and development, and flexibility and the ability to respond to rapidly changing technology is an important factor in the success of this prestigious operation. Our projects have included interactive graphics, display systems, navigational trainers, simulation and modelling, process control and automation, expert systems, command and control systems and system software.

COMMERCIAL

LOGSYS Business Systems, an associate company to Logsys Advanced Systems, produces specialist applications programs and packages for commercial users, particularly Insurance and Reinsurance Brokers, and Advertising Agencies. Early in 1984 we shall be moving to brand new offices in Wokingham, which will also house our VAX, PDP11 and WANG computers. We have other offices in London and New York.

As a direct result of the popularity of our business systems we now urgently require the following additional staff:–

ANALYST/PROGRAMMERS (2) to £12,000

Wokingham based, probably 2 days in London per week. A minimum of 2 years experience in insurance, reinsurance, commercial or financial systems. Previous Hardware is largely irrelevant.

PROGRAMMERS (3) to £10,000

Wokingham. 2 years commercial experience using either COBOL, BASIC PLUS or BASIC PLUS TWO essential.

Our staff are expected to produce robust and effective systems, on time and to pre-defined standards. Senior staff are required to travel to client sites as necessary, and therefore must be of smart appearance.

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If you enjoy working in a challenging, changing and growing organisation, where management are responsive, and where you can influence decisions and grow with the Company, then you will enjoy LOGSYS. Working conditions are excellent and there are regular salary reviews and useful fringe benefits.

LOGSYS

To apply for one of these positions or to obtain more information, either telephone, write or send your resumé to Clive Williamson, LOGSYS, 72 Kingsley Road, Northampton NN2 7BL. Telephone 0604 711209. 9 a.m. to 9 p.m. any day including week-ends.

(7198)

Exciting

Career Prospects

Because of their continued expansion programmes, our clients have URGENT requirements for the following KEY personnel.

We have many other exciting opportunities for computer staff particularly Programmers and Analysts, and would be very pleased to hear from you if you are considering a career move.

Your first step to pursue these exciting career opportunities, is to telephone ANTHONY HALL, Computer Search & Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: Hemel Hempstead (0442) 40761.

Technical Support Analyst **c.£10,000**
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Business Analyst **c.£13,000**
Based in Middlesex, the person appointed will analyse financial systems, so it is imperative that he/she has a sound financial background. The current project involves the total update of their European General Ledger and on-line receivables.

Programmers **c.£8-£12,000**
Based near Redditch, our client is seeking a number of programmers with relevant VAX/COBOL experience with FMS/VMS/TDMS.

Analyst/Programmers **c.£12-£12,500**
Based in Middlesex the successful applicants will have strong COBOL experience, preferably on IBM. If IBM background, then you must have DOS/VSE and ICCF.

Systems Software Specialists **£Negotiable**
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Our client is seeking very high calibre specialists with relevant MVS/OS experience. Salaries will reflect the importance of these KEY positions.

Programmers **c.£8-£13,500**
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Telecommunications Engineer

c£8,500 **Bristol area**

Our Client, a major subsidiary of a multi-national Group, is in the process of developing a nationwide interactive network of Hewlett Packard 3000 minis, using CASE DCX equipment.

This has created a requirement for an additional person who, reporting to the Telecommunications Co-ordinator, will assist in the planning, installation and day to day running of the Company's telecommunications facilities.

Our Client is seeking an ambitious Telecommunications Engineer with at least six months practical involvement in data communications, and the ability to isolate problems, either personally, or by calling in the relevant engineering support.

This newly created, career position will suit someone with a practical bias and the ability to generate positive relationships with users.

This is an excellent opportunity for a young and ambitious person who enjoys variety, challenge and travel and is keen to take advantage of the excellent career prospects available within this growing and highly profitable Organisation.

A current driving licence is essential, as a company car will be available for travel to remote sites.

Starting salary is negotiable in the region of £8,500.

If you possess the necessary level of experience and are looking for an interesting future, contact **Ian Payne** on **021-236 3781** for further information and application form. Alternatively, send him a brief Resume of your career to date at the Birmingham office address which is shown below.

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Our Client, Universal (CMS) Ltd., is a small but well-established Software House with teams specialising in the clothing and textile industry and wine and spirits industry. Due to increased demand for their services they now require additional senior DP professionals to join them at both their Windsor and Leicester based offices.

SYSTEMS SUPPORT ANALYST c.£13,000 + CAR

The essential quality for this position is the ability to support existing installations and new sites in both a formal training role and informal support role. Applicants should have experience of presenting training programmes and providing a high level of documentation for courses and customer support. Any exposure to Burroughs small system would be of benefit.

SYSTEMS ANALYSTS to £15,000 + CAR

Candidates should have a sound DP background with experience of designing commercial real time systems on mini or microcomputers. They must also have seen at least one project through from feasibility study to full systems implementation. As there will be a good deal of customer contact and support, applicants must be professional in both appearance and attitude.

The Company has now reached a crucial stage with its planned expansion and is dedicated to recruit the right individuals to join their young and dynamic teams. If you can meet the above requirements and would enjoy working in a challenging and rewarding environment, contact Mike Harmer at Apex 01-404 4821 or Terry Forsey at Universal (CMS) Ltd. Windsor (07535) 54587 for further details.

404 4821 Apex

Apex Computer Recruitment Ltd.
London Office: 59 Grays Inn Road, London WC1X 8TL Tel: 01-404 4821
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(501)

Plenty of work for experienced staff

Contract agencies are enjoying record business, says Keith Holder

BUSINESS is booming. That is the message from contract staff agencies many of which are reporting their highest levels of business. This in turn is leading to increased opportunities for operators, programmers and analysts to cash in on a lucrative part of the market.

The demand is for experienced personnel. Just how expert depends on the area served by the agency, but three years' work on one of the major manufacturer's machines – IBM being a clear preference – and online database experience is a typical requirement.

Most of the larger agencies have their own vetting procedures to screen potentials, checking technical knowledge and references.

This quest to provide top quality staff has its problems. Mike Shine, personnel manager for CDS-IBM systems software, said it was more difficult than ever to attract staff of a suitable calibre.

One of the major reasons is the reluctance of people to change location. Steve Whiting of Trident, one of the UK's largest contract organisations, said that in many cases, potential staff had only looked at the benefits of contract work, and did not like the idea of chopping and changing location.

The consensus among agencies was that while young or unattached staff enjoyed the variety, those with families soon tired of the travelling and looked for permanent positions.

Most agencies expressed a desire to build up a team which would carry on for many years.

Some contracts can last for up to two years, requiring temporary relocation, but most are still between six weeks and three months.

Travel, while necessary, need not be widespread as the demand for contract staff falls into well defined regions, London being the main one, and it is possible to find agencies which serve a particular geographical location.

Though the market continues to grow at a greater rate than that for permanent staff, the type of staff required is changing, along with the type of company now using contract employees.

Chris Jordan, recruitment co-ordinator for Data Power Computer contracts, said this could be linked with the recession, and the emergence of smaller systems.

This deficit of staff has arisen because companies either scaled down their DP departments or held off investment in new equipment, and this is beginning to show, said Jordan.

There has also been a marked change in the type of systems being installed, with a massive increase in the use of microm puters, particularly in small companies.

Minicomputers are also now a significant portion of business systems said Marilyn Davidson, a director of CPL with the Vax the most popular.

This is creating a need for people experienced in systems that have traditionally not been served extensively by the contract agencies.

Another factor boosting the need for people with small systems experience is that even large organisations with existing DP departments do not always have staff familiar with this type of equipment. The argument against appointing permanent staff for micro-based systems is that once set up, there is not usually a lot of development work to be done.

Whiting said that, though still dominated by IBM, there was a significant increase in the need for staff with experience of other manufacturers' equipment, notably ICL, Honeywell and Univac.

Top of the league in requirements for software and operating systems skills are Cobol and CICS, with HP3000, ICL VME, DM-1 and RPG just behind.

The contract market is still tied to the cities and the demand for staff with financial, accounting and commercial backgrounds is prevalent.

London and the south-east is still the richest hunting ground, though the Midlands and south-west are also fairly safe bets for the job hunter.

According to some contract agencies, once out of the London area there is greater opportunity for those with engineering and manufacturing backgrounds. This is particularly true in Scotland, said Carol Sutherland, of Hill Briton and Associates, who cited the electronics industry, including Ministry of Defence contractors, as sources of employment.

The potential for contract employment does not stop at the British coastline either. Octopus International and CDS-IBM both reported a healthy list of customers in Europe. Requirements for specific experience seem much the same, though there are languages to cope with.

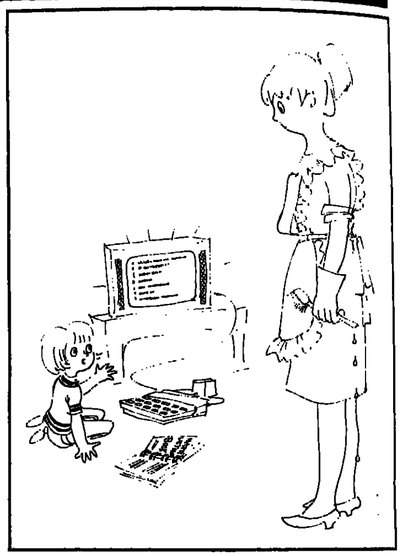
Germany, Belgium and Holland all provide a steady requirement for contract work. Work comes mainly from banks, and financial institutions and UK companies with European offices.

Contract staff can expect to be paid about twice the going rate for permanent staff, though it can rise to three times for jobs in Scotland and remote areas. Set against this is the fact that the contract worker will have to organise his own National Insurance, pension contributions and tax. There is also the possibility that there may be lengthy gaps between contracts.

Whiting said a good worker should not find it too difficult to stay in work.

While the contract agencies represent the most accepted source for staff, it is possible to go it alone, especially for small systems. This can, of course, be a hazardous business as the degree of protection offered by the agencies is absent. They warn of potential exploitation and advise anyone considering this course to make sure they get a formal contract – and even then check it with a microscope.

Contract staff can expect to be paid about twice the going rate for permanent staff. Set against this is the fact that the contract worker will have to organise his own National Insurance, pension contribution and tax



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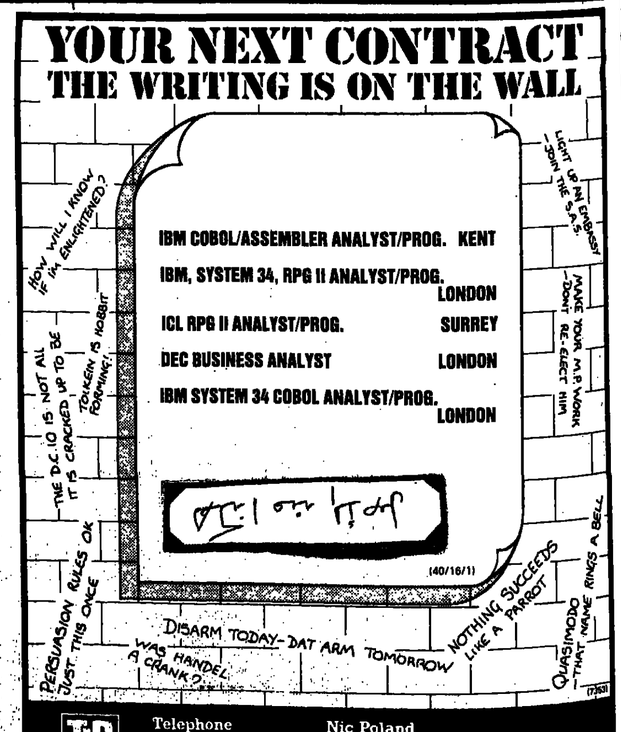

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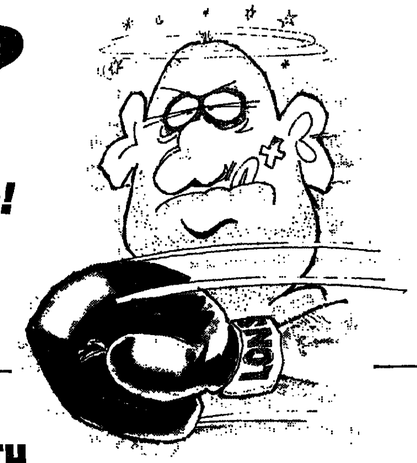

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IBM PL/1 CICS DL/1 PROGRAMMERS URGENT
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IBM MVS TSO FORTRAN ANALYST/PROGRAMMER
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IBM MVS ON OS SENIOR ANALYST
IBM MVS ON OS + CICS SYSTEMS PROGRAMMER
IBM + DATA ANALYSIS BUSINESS ANALYST
IBM DOS/VSE SYSTEMS PROGRAMMER
IBM JSP COBOL PROGRAMMER
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IBM OS PC/1 CICS DC/1 CHIEF PROGRAMMER

ICL
ICL 2900 PASCAL VME
SOFTWARE AUTHORS – SMALL SYSTEMS
COMMS CONSULTANT
ICL 2900 SYSTEMS DESIGNER
ICL SV/4 VME DME COBOL TPMS TPS PROJECT MANAGER
ICL 2900 COBOL IDMS VME PROGRAMMER
ICL 2900 COBOL PROGRAMMERS
ICL ME29 TME TP COBOL (FINANCIAL BACKGROUND) SENIOR ANALYST/PROGRAMMER
ICL MICRO UNIX PROGRAMMER
ICL 2900 SCL PROGRAMMER
ICL SV/2S ASSEMBLER PROGRAMMER
ICL 1900 PLAN PROGRAMMER
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(7349)

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SYSTEMS & PROGRAMMING

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ICL PROGRAMMERS & SYSTEMS ANALYSTS
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IBM COBOL ANALYST/PROGRAMMERS
ESSEX **£9,000-£11,000**
Due to further computerisation of financial systems, this Essex-based manufacturing concern has a requirement for IBM Analyst/Programmers. Applicants should possess 18 months+ COBOL expertise. Training as required in CICS, DL/1 and Analysis. Excellent career prospects and occasional overseas travel. Ref: M2100

IBM PROGRAMMERS
CITY **£8,500-£11,000**
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(7384)

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Based in Riyadh/one year renewable contracts/ accommodation/sports facilities/medical insurance/ company vehicles.

For further details contact Bill Torbitt on Farnborough (0252) 516141.

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Our requirements are as follows:

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The contract will be for six or 12 months (extendable) and the package will include:

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For further details contact Steve Whiting on Farnborough (0252) 516141.

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(7362)

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UNIVAC 1100, COBOL	Team Leader: Programmer	Essex
HP3000, COBOL	Programmers	London
Texas Instruments	All levels	London
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Contract or permanent, we can offer you the range of positions and applications to broaden your technical expertise and enhance your career advancement into project management and beyond. We can also offer you excellent salaries plus the full range of benefits associated with a successful software house, including the opportunity to work on challenging projects throughout the UK, Europe, Middle East and possibly the USA.

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Our Client is a large oil transportation corporation based in downtown Los Angeles, responsible for a complex distribution system covering the West Coast of America.
They are currently in the process of upgrading from B2900 to B4900 using MCP/GEMCOS and DMSII. Their expansion has created a variety of career openings for ambitious D.P professionals in an exciting, new environment.

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Database Analysts will be responsible for design and implementation of new logical and physical databases, including planning, standards, security and development.
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Technical Support Analysts will assist users of distributed processing systems on a technical basis, and will be responsible for purchase, installation and user training in all phases of systems acquisition.
Analyst Programmers will develop new applications systems of a commercial nature, and enhance various financial systems currently in use or under development.

Our Package

provides: full family airfares, relocation allowance, medical insurance, sick pay, **arranges:** banking facilities, accommodation, car transport, assistance in settling in. And our local office in Los Angeles is minutes away from our Client's site, providing you with on-the-spot support and advice.

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We are interviewing in London, Birmingham, and Manchester over the next 2 weeks, and our American Client will conduct selection interviews in London on Jan 30th, 31st and Feb 1st.
Don't delay, ring Julia Hide at Computer People International on 01-836 8411 *today!*

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●01-836 8411 *Computer People London, VLI House, 68-69 St Martin's Lane, London WC2N 4JS* ●01-680 4013 *Computer People South, 27 George Street, Croydon CR0 1LB* ●021-643 8501 *Computer People Midlands, Alpha Tower, Birmingham B1 1TT* ●061-491 1666 *Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA* ●01-836 8411 *Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS* ●01-836 8411 *CoOperators, VLI House, 68-69 St Martin's Lane, London WC2N 4JS* ●021-643 8732 *Sales People, Alpha Tower, Birmingham B1 1TT* ●*also offices in New York, Kentucky and Los Angeles*

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Our Client now seeks an additional pre and post **Sales Support Engineer**, qualified to at least HND level, with sound micro hardware and software experience together with practical experience of mainframe communications. An element of European travel may be required for this post.

A workshop based, **Microcomputer Technician**, with at least three years component level repair experience of Micros and peripherals, a knowledge of TTL logic and both floppy and hard disk technology will also be required to supplement a highly skilled team of microcomputer technicians.

Salary will be no obstacle to the right Candidates, and on offer is an excellent benefits package with excellent career prospects in a rapidly expanding environment.

For further information, telephone **Trevor Money** on **021-236 3781** (24 hour answering service) or **021-449 1870** (Evenings and Weekends).

Technical, Sales & Management Appointments

(7344)

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PUBLIC SECTOR APPOINTMENTS

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Birmingham City Council, the largest city authority in England, serves a population of over 1 million with a diverse commercial and industrial Community. The City Treasurer's Department has responsibility for nearly £1000m p.a. on capital and revenue account and playing a vital role in the Department's activities is the purpose built Computer Centre, which is located close to the City Centre. The Centre operates an IBM 3033 with 13,000 megabytes of backing store to support over 400 terminals with a further 200 planned.

An IBM 3081, with an increase in backing store to give a total of 30,000 megabytes is being installed to cater for the development of new applications.

As a result of this substantial increase in complexity, the Technical Support Group now requires experienced Computer Professionals to work in the areas of **Operating Systems, Communications Network** and **Operational Service Support.** The software in use includes MVS/SP, JES2, IMS, ACF/VTAM/NCP, TSO/SPF, and VSPC with a wide range of other development/personal computing facilities.

Good terms of employment include flextime working hours based on 36½ hour week, assistance with relocation in approved circumstances. For application form candidates should apply to:-

City Treasurer (Ref PSO), Council House, Birmingham B3 3AB.
Telephone: 021-235 2993.

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In addition to in-depth technical knowledge of the appropriate hardware and software, the successful candidates must display the qualities required to lead a team of skilled Systems Programmers and to plan and control the successful implementation of technical projects in a complex environment where performance and availability is a key requirement.

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(7307)

BIRMINGHAM CITY COUNCIL

THE UNIVERSITY OF ASTON IN BIRMINGHAM
MICROPROCESSOR UNIT

LECTURER

Applications are invited for the above post. The Microprocessor Unit provides undergraduate and postgraduate courses, undertakes project investigations and is actively engaged in research. The Unit is associated with the Department of Electrical and Electronic Engineering and provides a University central resource for research, design and development of programmable electronic systems, microprocessors and related computational systems, software and systems engineering.

The lecturer appointed will be expected to undertake general teaching duties which may include contributions to courses in Electrical and Electronic Engineering, Electronic Systems Engineering and Information Technology. The post should provide an excellent opportunity for research.

Applicants should have research interests which complement or augment those outlined above and should have a higher degree or equivalent experience. The appointment will be for a period of three years initially, with the possibility of renewal or subsequent transfer to a continuing appointment. Initial salary will be within and up to the maximum of the range £7,190 to £14,125 per annum.

Application forms and further particulars may be obtained from the Staff Officer (quoting Ref. 589/102), University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. Tel. 021 359 3611 Ext. 4584. Closing date for the receipt of applications is 10th February, 1984.

(7331)

UNIVERSITY OF LONDON
CENTRAL INFORMATION SERVICE

SENIOR PROGRAMMER

CIS is a part of the Library Resources Co-ordinating Committee of University of London, and has just been awarded a research project to develop a prototype microcomputer-based expert system for library use. We are looking for a Senior Programmer to take part in the development of this system. Applicants should have experience of designing, writing and testing computer programs in one or more of the main languages (e.g. Pascal, 'C'). Knowledge of a high-level language such as Prolog, Lisp or Logo would be an advantage, familarity with microcomputer systems would be preferable.
The initial appointment will be for 18 months, commencing as soon as possible. Salary is negotiable.
Further information can be obtained from:

Mrs A. Vickery, CIS, University of London Senate House, Malet Street London WC1E 7HU
Tel: 01-636 8000, Ext. 3089

(7377)

ANALYST PROGRAMMER MICRODATA SEQUOIA

Bristol/Bath Area
£8154-£9660 per annum

The District Council are installing a Sequoia supporting a network of 30 terminals. Initial work will involve the transfer of systems from an existing mainframe computer. Following this a number of new mainly non-financial applications are planned.

Applications are invited from people with suitable qualifications and experience.

Removal expenses will be reimbursed and there will be assistance towards house sale and purchase fees as appropriate.

Applicants who wish to discuss this post informally with the Computer Manager, are invited to contact Mr. Broome after 23rd January on Ext. 256.

For further details and an application form, please contact Susan Phillips, The Civic Centre, High Street, Kingswood, Bristol BS15 2TR, telephone (0272) 601121, Ext. 212. Please quote post reference CFO/53.

Closing date: 3rd February, 1984.

Kingswood District Council is an equal opportunity employer.

(7330)

Hereford and Worcester County Council

REDDITCH COLLEGE

Department of Technology
Computer Unit

LECTURER (GRADE 2)

COMPUTING

Required as soon as possible a Lecturer in Computing. Data Processing, Programming and Computer Studies on courses leading to BEC and Higher BEC and Professional Qualifications, BEC/TEC Diploma in Computer Studies, TEC and Higher TEC and other computer courses.

Applicants must possess a degree or equivalent professional qualification preferably with recent commercial and/or teaching experience.

Commencing salary within L.II range £7,215-£11,688 dependent upon age, qualifications and experience.

Further details of this post, together with application form, may be obtained from:

The Principal, Redditch College, Peakman Street, Redditch, Worcs B98 8DW. Telephone: Redditch 63607.

(7303)

HEALTH SERVICE COMPUTING

The Operations Department of the South West Thames Regional Health Authority Computer Centre has the following positions available:

Operations Support Clerk – c£6-£9k

Experience of Operations and JCL is essential. Previous user liaison experience would be advantageous.

Data Control Clerk – c£6-£8k

Applicants should have a good knowledge of ICL George 3 JCL and an understanding of Standards and Procedures. Trainees may be considered.

Computer Operator – c£6-£8k

At least 12 months' experience of ICL George 3 is required. Trainees may be considered.

The Regional Computer Centre is located at Tooting, SW London and current computer services are based on ICL 2956 and 2966 mainframes running under George 3.

DEC mini-computers are also being installed throughout the region to provide Direct Data Capture, Database and Patient Administrative facilities.

Please write with full details or phone:

PETE CHAPMAN/IAN GARDINER
SWTRHA REGIONAL COMPUTER CENTRE
SPRINGFIELD HOSPITAL, GLENBURNIE ROAD
LONDON SW17

TELEPHONE: 01-672 9988

(7275)

PUBLIC SECTOR APPOINTMENTS

Computer Operator

£7,782-£9,643 p.a. (including Shift Allowance)
(Two shifts, 7.30 am-11 pm)
IBM 4341 – VM – DOS/VSE

If you have at least 18 months' IBM operating experience and are looking for a position in an expanding installation where your efforts will be recognised, then our career-graded operator post may be of interest to you.

Our machine is an eight megabyte IBM 4341, with 3370 FBA Disks, tapes and printers, plus an ever increasing local and remote T.P. network.

The installation runs DOS/VSE-POWER as a cardless system, controlled on-line through VDUs under QUOTA III (via CICS), as part of the VM-Master System. Experience of CICS and VM would therefore be an advantage.

We also use a variety of Software aids and packages such as the CA-DYNAM range for file control.

Additionally, housed in the Computer Room is a WANG SYSTEM (VS100) with 2 x 288mg disks and a 75mg disk together with two tape drives, which is used for DP and WP projects.

Starting salary will depend on experience to date, and the post is open to men and women.

For further information telephone 01-863 5611 and ask for either David Clark, ext 2193, Ken Durtnall, ext 2208, or the Shift Leader, ext 2932.

Application forms, returnable within 14 days of the appearance of this advertisement, from the Controller of Financial Services, London Borough of Harrow, PO Box 21, Civic Centre, Harrow, Middlesex HA1 2UJ. Telephone: 01-863 5611, ext 2339.

Harrow (7280)

NORTH EAST THAMES
REGIONAL HEALTH AUTHORITY

PROGRAMMER/ ANALYSTS

Harold Wood, Essex

This is an opportunity for Programmers with at least two years experience to join teams working on a number of interesting on-line projects.
We have an immediate requirement for two to join the team developing and implementing the Regional Pharmacy System on PDP 11 computers using the MUMPS interactive language. The positions are based at the Regional Computer Centre at Harold Wood, near Romford, Essex and offer:–

- *Starting salary to £10,000 depending on experience*
- *Interesting projects*
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- *Pension scheme.*

To arrange an informal discussion or to request an application form please contact Eddie Evans, Regional Computer Centre, Harold Wood Hospital, Gubbins Lane, Harold Wood, Romford, Essex. Tel: Ingrebourne 71821. (7430)

UNIVERSITY OF SURREY

ANALYST/PROGRAMMER – DATA PROCESSING

The Data Processing Section of the Computing Unit has a vacancy for an Analyst/Programmer to develop systems for the University's Administration and Library. The successful applicant will develop systems on a variety of computer equipment, programming in Cobol.

Applicants should have proven programming ability and a degree or equivalent qualification.

The appointment will be made on the Computer and Other Related Staff IA salary scale, (£7180-£11815 per annum), according to age, qualifications and experience.

Further particulars are available from the Staff Office, Guildford 571281 extension 778.

Applications in the form of a curriculum vitae (2 copies) including the names and addresses of two referees should be sent to the Staff Office, University of Surrey, Guildford, Surrey GU2 5XH, by 10 February, 1984 quoting reference 209/CW. (7298)

COUNCIL OF THE BOROUGH OF OSWESTRY

SENIOR TECHNICAL ASSISTANT

Scale 6/SO1 (£8,154-£9,660)

Applications are invited from suitably experienced persons for this new post in the Finance Division of my Department, to manage and operate all aspects of the Council's computing facilities. The Borough Council is a small authority with a strictly controlled staffing establishment, but committed to using new technology in order to maximise its efficiency.
The successful applicant will be required to operate a Burroughs B1915 computer without supervision or assistance, to introduce new systems and to advise my Principal Finance Officer on all computing matters.

Further details and applications from the address below. Closing date, 11th February, 1984.

Dated 10th February, 1984
A. Speak
Chief Executive and Director of Finance

Council Offices, Castle View
Oswestry, Shropshire SY11 1JR
Telephone: 0691-654411 (7306)

Are you interested in helping people and being at the forefront of technical developments?

TECHNICAL SERVICES MANAGER
SENIOR SYSTEMS ANALYST
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BLOOMSBURY Health Authority

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At least two years relevant experience and a knowledge of FORTRAN are essential and familiarity with statistical packages, ICL GEORGE-III, FILETAB and COBOL would be an advantage.

An application form, job description and further particulars may be obtained from Mr A. A. Collins, Centre Administrator, PHLS Communicable Disease Surveillance Centre, 61 Colindale Avenue, London NW9 5EQ. Tel. 01-200 6868. Closing date: 2nd February, 1984. (7359)

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This is a single status assignment with a one-year renewable agreement. Qualified applicants should forward a full cv to:

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SALES BIT

Quality of Management – 79

Surprise your trainee – join him for a full day in the field

A BASIC rule of field training is that only two representatives of your company should be involved – typically the salesman and his manager. There is no additional room for visiting dignitaries, trainees, or yo-yos from head office.

What we are talking about is a serious selling and training call which means that any possibility of intimidating the client or the salesman by weight of numbers must be avoided.

The field training exercise must be based on a normal working day if it is to be effective. Involvement in a sequence of sales calls that have been specially set up by the salesman to create the best possible impression is of little educational value.

It is important to discover not only how the salesman operates within the individual sales call but also how he organises his normal working day.

The sales manager must be seen to put in a full working day rather than sloping off in the middle of the afternoon with lame excuses about "sorting out a few problems back at the office"

There is only one effective way of achieving such an insight and that is surprise!

Don't make arrangements to accompany your salespeople well in advance – make them the previous evening. After all, what hardworking and well-organised salesman could object to that?

It may turn out that he has to make alternative arrangements for getting his kids to school, or it may completely ruin his afternoon game of golf. But who's the real bad guy in that situation? Certainly not the sales manager trying to do a normal day's work and trying to gain a true perspective of what his salespeople are giving in return for a "fair day's pay".

By the same token the sales manager must be seen to put in a full working day rather than sloping off in the middle of the afternoon with lame excuses about "sorting out a few problems back at the office." The salesman is almost certain to draw the conclusion that a full selling day is too much for you.

So, if the boss feels the need to terminate the selling day at 4pm, why shouldn't he?

The field training session should be like any other selling day with the first call at 8.30am, or the earliest time a sales visit can normally be made, and the last at the very end of the business day. Anything else merely condones insufficient discipline and lack of commitment.

One important discipline is deliberately to make a few calls yourself with the salesman in the background. I am not talking about taking over a call while it is in process – this should be avoided at all costs – but agreeing with the salesman before the call is made that you will handle this one, and his role is merely to observe and criticise. This is particularly relevant to sales trainees.

Many sales managers are reluctant to put themselves on display in this way for fear of making mistakes, or perhaps looking foolish in front of a subordinate. This is misplaced insecurity. What is the point of the exercise – to prove that you are infallible, the perfect salesman? Of course not – it is to give the salesman the assurance of knowing that all sales people make mistakes, and the object lesson is witnessing that one can often learn more from seeing other people make mistakes.

It also makes the point that you are not a head office theorist but rather someone who really appreciates the realities of the field, and above all you are a normal fallible human being to whom the salesman can relate.

It's worth mentioning the implications of occasionally subcontracting field training to senior salespeople. The first person who comes to mind is your star salesman. It may seem logical that the salesman who has the ability to top the league table year after year should have the right skills to pass on to the aspiring young salesman, but you couldn't be more wrong.

Top performers more often than not break the rules and cut corners, but you allow them to get away with it because they consistently over-perform.

The effect on a sales trainee of being exposed to this kind of salesman is to accept a method of operation that is unlikely to work for him or to be completely demoralised by the apparent ease and confidence with which the ace salesman is able to get the business.

The right kind of senior salesman to provide field training is one of your well-established consistent "target performers"

The right kind of senior salesman to provide field training is one of your well established consistent "target performers". He is the kind of person who always operates by the book, always keeps his paperwork in order, never fails to work a full day and sees training a "rookie" as an attractive challenge rather than an imposition.

One final point: be sure to follow up the training session with a note to the salesman, not only highlighting the most salient points to come out of your visit, but also thanking him for his time. It is a courtesy that will not go unnoticed and make it clear that you consider the time spent together important and worthwhile.

In other words, treat him as you would expect him to treat your company's clients.

Alan Williams

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Thursday, January 19, 1984

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CSA fears reshuffle at DoTI will hit industry

by John Kavanagh

THE reshuffle of top civil servants at the Department of Trade and Industry has come at the wrong time for the computer industry and could further delay government decisions on key issues.

That is the view of the Computing Services Association (CSA), which points to delays in decisions on support for exporting and for educational software. It is also concerned about the future role of British Telecom in the computing business.

Six under-secretaries are changing jobs. The department says it is normal for civil servants to move after three or four years. But CSA director-general Doug Eyeions says they should stay longer.

"A lot of the issues in our industry are very technical," he says. "All these people were doing good jobs, but just as they get a feel for the industry, they get moved on."

Eyeions says the reshuffle followed a "frustrating" 1983. Decisions had been delayed because of the election, the merging of the trade and industry departments and the appointment and subsequent resignation of industry secretary Cecil Parkinson.

As a result, the UK could miss out on the world market for software for schools, Eyeions says. "This market's relatively small in the UK but it could be a major export market – and the UK has the right pedigree to be successful," he says.

"The UK has a high reputation in educational publishing and in software, and English is widely used in education around the world.

"We should be building up a strong home base of proven software – but we need a government lead. One problem is that it's not even clear which department it should come under."

This comment reflects the fact that microcomputers have been put in UK schools with backing from the Department of Trade and Industry, but the Department of Education and Science is reponsible for training teachers.

Eyeions also points to the long-overdue decision on further funding for the government's Export IT organisation, set up at the end of 1981 with one year's money. It is still surviving on that initial backing.

David Broad, chairman of the British Microcomputer Manufacturers Group, is worried that the department could get bogged down in the Telecommunications Bill and the sale of British Telecom to the private sector.

"Our worry is that the size and complexity of the bill will create an enormous workload and thus put back some other very important issues," he says.

The CSA is concerned about the future of British Telecom's BT Enterprises, which sells telephones, network services, information services and business systems and software. At a top-level CSA meeting last week, members said they were worried that BT Enterprises could get unfair advantages from its links with its huge parent.

BT says each subsidiary is a proper profit centre, paying for its own telephones, buildings and promotion.

"We've had assurances from BT – but who's to judge whether it's overstepping the mark?" Eyeions says.

BT Merlin, the business systems arm, has 3.5 million business customers because it handles the sale of telephone exchanges, modems and teleprinters.

■ Under the reshuffle Alistair McDonald, head of the information technology division, replaces Jonathan Soloman, who moves to head the quality and education division. Jack Leeming goes from there to the space, Post Office and film industry division. He takes over from Philip Cooper, who is going to the department's Warren Spring Laboratory because the director, Dr Alan Robinson, is retiring.

EYEIONS . . . "A frustrating 1983."

Tycom takes a Rita

by George Black

MICRO manufacturer Tycom has followed its scoop of the Tory Party contract by victory in the Rita (Recognition of Information Technology Achievement) awards.

The maker of the "future-proofed" Microframe has been named Newcomer of the Year, a title sponsored by *Computer Weekly* under the Rita scheme.

Tycom, under managing director Allen Timpany, was chosen as the start-up company that the judges thought was the best example of how Britain could remain a force in IT markets. The results were announced on Tuesday night at the Which Computer? Show in Birmingham.

Telemap – the consortium made up of British Telecom, EMAP Publications and distributor Prism – won the systems innovation prize for its Micronet 800, the modem link giving micro users access to Prestel and allowing nationwide electronic communication.

TIMPANY . . . Triumphant.

Personality of the Year was Acorn co-founder Hermann Hauser.

Apple's Lisa took the Office System of the Year award; Ashton-Tate had the satisfaction of beating IBM to the award for User Training Manual of the Year for its documentation of Friday, and software Product of the Year was Nucleus, the application of code generator produced by Compact Software of Dorking, Surrey.

Supplier of the Year was Bearminster of Ilford, a software house supplying low-priced micro support and accounting packages, and User of the Year was the property group, Haslemere Estates.

US Defence bids to stifle personal computers

by George Black

THE US Department of Defence is talking to NATO's co-ordinating committee on controls of exports (COCOM) about clamping down on the flow of personal computers.

A US government spokesman said the matter was "under some study" and it was likely that there would be "some change in policy". He would not comment on speculation that the world's best-selling micro, the IBM-PC, would be affected or that all 16-bit machines would need licences to be exported to the Eastern bloc.

US trade department officials, who have been fighting the Pentagon's move to impose tight controls on the movement of high technology products, are arguing that it is already too late to have any impact on the traffic in 16-bit machines such as the IBM-PC, of which hundreds of thousands of units have already been sold.

The discussions will give new momentum to the issue of extra-territoriality – or to what extent the US can lay down conditions for the use of its products beyond its own shores.

An industry department delegation to Washington next month, headed by secretary of state Norman Tebbit, will be arguing the view that the US has overstepped the limits. Industry department officials have been talking to IBM about its recent directive to 30 leading British users of its mainframe hardware advising them about the need for US licences.

IBM told its customers that US export rules restricted them from moving or re-selling their equipment and to do this they needed to apply to either the American Embassy in London or the Commerce Department in Washington.

The rules are framed in the US Export Administration Act which expired in the autumn, and which is only being kept in force through emergency measures taken by President Reagan. With the US administration resuming work after the Christmas recess, the battle over the shape of the new act will also be hotting up again.

IBM settles out of court

by Keith Holder

THE trade secrets battle surrounding IBM's civil suit against National Semiconductor and National Advanced Systems (NAS) is over. An out of court settlement between the companies has been approved by the US courts, and IBM will drop all charges and claim no damages.

The defendants still maintain their innocence, though the settlement calls for them to pay IBM's $3 million legal costs and submit new equipment to inspection for the next five years.

As the inspection cannot take place until after the first customer shipment, it will not affect future releases, says NAS's Chris Worral. He adds that IBM has always had the right to buy NAS machines.

Any future disputes will be settled by a US arbitrary body.

– So what's new in the public sector?

The Chartered Institute of Public Finance and Accountancy will be promoting a financial modelling workshop and exhibition alongside its annual conference in Brighton on June 6 and 7, 1984.

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Further Information from Julie Fowler, Conference Organiser, 1 Buckingham Place, London SW1E 6HS. Tel: 01-828 7661

cipfa

Taxmen stay out over pilot PAYE scheme

by George Black

MORE than 400 taxmen are staying out of work until the High Court rules on their computerisation dispute at the end of next week.

They rejected a management suggestion in the court last week that they should return to work on full pay without prejudice to the outcome of the case while waiting for the official verdict.

The Inland Revenue Staff Federation immediately put a counter-proposal that the men would work but not on the computer pilot scheme, which management says is vital to the computerisation programme.

A management spokesman says: "417 staff have been TRDed for refusing to implement COP" – which translated means "temporarily relieved of duty for refusing to implement the computerisation of PAYE".

The union side will not comment on possible future developments for fear of undermining its own legal position, but the executive committee is believed to be considering bringing in a voluntary levy among its members – as has happened in previous civil service disputes – to bolster its £1 million fighting fund.

Fourteen tax offices in the Midlands are scheduled to take part in a pilot scheme lasting the whole of 1984, with progressive implementation over the whole country during the following three years. The union claims that the work does not fall within the normal scope of its duties and management, therefore, has no right to suspend its members.

The Revenue says they are not suspended, only relieved of duties to which they can return voluntarily at any time. Around 125 staff are already participating in the pilot scheme.

The full five-day hearing is due to begin next Monday.

There is believed to be no precedent for a union taking its managers to court for breach of terms of employment involving new technology. The case could set an important precedent. At last Wednesday's brief hearing the court decided to adjourn until the full details could be investigated.

The union has chosen seven of its employees as "test" examples of employees, whom it says have been unfairly treated.

The computerisation of PAYE was announced in 1980. The contract went to ICL and could cost £700 million.

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ComputerWeekly

Thursday, January 26, 1984 Number 895 35p

Europe takes a step closer to unity

by Donald Kennett

ANOTHER step towards the creation of a unified European information technology market was taken last week with the agreement by Europe's telecommunications authorities to accelerate their move towards common standards.

Responding to a request from the European commission, senior telecommunications officials from the 26 countries in CEPT (the Conference of European Postal and Telecommunications authorities) agreed at a private meeting in Paris to speed up their programme of network harmonisation and interface standardisation.

The work is expected to take some time and no details were released about the measures that will be taken to achieve it. A British Telecom spokesman said, however, that a central theme would be digital interfaces for terminal equipment to facilitate end-to-end communication between users across national boundaries. The harmonisation of standards would increase the opportunities for the expansion of information technology across Europe, he added.

The harmonisation of standards was singled out as one of the six "action lines" for telecommunications adopted by the European Council of Ministers in September. The Commission followed that up by convening a group of officials close to the industry ministers in each of the member states to progress the policy.

The group has met in Brussels three times since November to discuss the detail of the actions. It plans its next meeting early next month. Other action lines in the EEC strategy cover co-ordinated planning, common R&D, transnational links, developing the telecommunications infrastructures of the poorer EEC countries, and opening public procurement in EEC countries to supply from other EEC countries.

Standards have been a problem in that even where they have been developed internationally they have been implemented differently in different countries. X25 is said to be a prime example of this.

As EEC IT task force chief, Michel Carpentier, pointed out late last year that an effectively harmonised European IT market would be 30% of the world's total, whereas no European country accounts for more than 4% of the world market on its own.

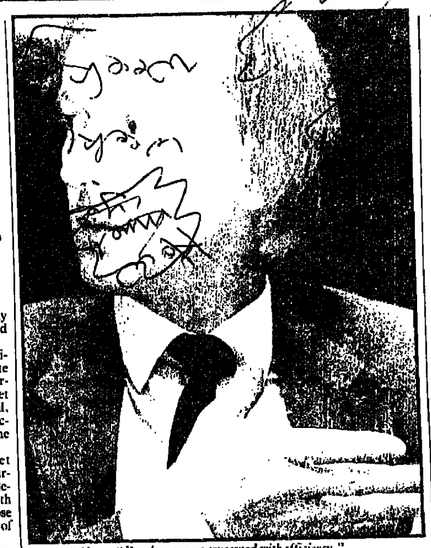
Such a harmonised market would give European manufacturers a significant advantage in developing products to compete with the much-feared Japanese, whose home market accounts for 12% of the world.

Standardisation is a hot issue on a national scale too, and several countries have mounted initiatives to encourage the use of interim standards whilst waiting for international ones to be developed.

Stimuli have also been necessary to break the deadlock caused by lack of user interest in standards before they were available in products matched by a lack of commitment to them by manufacturers before users demanded it.

One such stimulus often advocated is "enlightened government procurement" and a major government project announced earlier this month has the encouragement of standards as a central theme (see news analysis, page 9).

■ Leader Comment – page 15



HOLDEN . . . "People are more concerned with efficiency."

Drive for efficiency shows in training

by Philip Hunter

THE systems analysis training market is booming, while demand for the traditional courses in programming has fallen off, according to a survey due next month from the National Computing Centre.

Fewer programmers have been changing jobs during the recession, the survey says, and their employers have therefore been more willing to train them in systems design and fourth generation applications generators.

"People are becoming more concerned with efficiency of systems," explains Keith Holden, NCC group manager for training. Firms are sending their people on courses about systems maintenance and design.

Another reason for the trend is that many government contracts awarded by gthe CCTA specify

■ Continued on page 2

DEC shows recovery but Prime falls

DIGITAL Equipment showed a sharp recovery in its second quarter results to December 31, following the dip in the previous quarter caused by poor sales of its personal computer. Revenues were up 40% on the 1982 second quarter to $1.4 billion and net profits up 32% to $80 million. Half-year revenues rose 29% to $2.5 billion, but half-year profits were down 18% from a year earlier to $96 million.

At Burroughs' a fourth quarter profit of $81 million boosted, full year profits 67% to $197 million on revenues of $4.4 billion, despite mid-year losses. Prime's full-year net profit fell 28% to $33 million on revenues which increased by 19% to $517 million.

Bill changes

MEMBERS of the Telecommunications Engineering and Manufacturing Association are hammering out specific amendments to the Telecommunications Bill, which goes into its Committee stage on February 9. The association fears that British Telecom's suppliers will get squeezed with BT developing its own manufacturing capacity and importing equipment. It is pressing for parliamentary scrutiny of BT's licence to prevent this. BT is opposing any amendments to the legislation.

Trial put off

THE full trial of the case between Mercury, the private telecomms company, and the telecomms engineers union, the POEU, looks like being put off until July. It was expected to be heard this month. The date will be set at a preliminary hearing on February 28. Mercury is seeking a permanent injunction to stop the POEU taking industrial action against it.

CARPENTIER . . . Harmony.

Users are unhappy with their support

by John Riley

MAINFRAME and minicomputer manufacturers should give their users better technical support and better applications software. Those are the main complaints to emerge from this year's *Computer Weekly*/Datapro user satisfaction survey.

Twice as many users responded to this years' survey, the largest so far with 2,064 responses. Apart from the two general grouses, most are satisfied with their machines overall. Moreover, most of those users who are not satisfied with their machines say that they will stay loyal to their manufacturers.

Unsatisfactory technical support – in user education, documentation and trouble-shooting system faults – was also the main overall complaint last year, which suggests that in general manufacturers are turning a deaf ear to users' complaints in those areas.

See pages 18-19 for full details

The IBM plug-compatible manufacturers, Amdahl and National Advanced Systems (NAS), top the poll in the mainframe section for overall satisfaction, and nearly 400 IBM mainframe users give IBM a vote of confidence.

The two mainframe companies that came lowest overall in the satisfaction ratings last year, Sperry and NCR, also come lowest this year.

However, there is a sharp increase in the number of users prepared to recommend their systems, and less than 5% of Sperry and NCR users intend to switch to another manufacturer.

Hewlett-Packard, Digital Equipment and Perkin-Elmer top the user satisfaction ratings in the minicomputer section, and IBM comes fourth.

Several minicomputer companies are down on last year; the company with the biggest drop in user satisfaction is NCR, mainly due to lack of all the promised software of support and late installation of equipment.

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Tebbit promises re-export protest

by George Black

WASHINGTON has backed up IBM over its letter to 30 top UK customers reminding them of their obligations under American licensing regulations.

A statement from the Commerce Department confirms IBM's position that transfers of listed machinery between different users has to be notified, whether within the UK or on re-export.

But it admits that the regulations are "not totally clear" and adds that over the years the Office of Export Administration has "interpreted" them in this way.

The statement will provide the focus for a protest to be lodged by Secretary of State Norman Tebbit when he visits Washington early next month.

He will meet the heads of several US government departments, and has Mrs Thatcher's personal support for a tough negotiating line on free trade in technology.

Tebbit will also discuss proposed new rules published by the Commerce Department last week which would limit the issuing of general distribution licences for high technology, and which would tighten procedures for selling goods outside Cocom (Nato coordinating committee) countries. Until now, general licences have allowed multiple shipments under a single permit by US manufacturers to foreign customers. The proposed changes would make the licences harder to obtain and harder to comply with.

The draft Commerce Department rules have brought an angry reaction from European companies and governments, who see them as restricting trade and being another example of the US trying to impose its laws outside its own borders.

Commerce Department officials are embarrassed by IBM's sending the letter without consulting them and – as they see it – stretching the interpretation of the regulations to the limit.

They are keen to dissociate themselves from the clampdown policy advocated by the Pentagon. But IBM's action has forced their hand and will bring the whole matter to a head during the Washington visit.

Speaking on the Radio 4 programme *Today*, Tebbit quoted IBM's letter and commented: "That is quite clearly an attempt by the US government to impose its laws within the UK, and that of course is contrary to international law."

In "words of guidance to the management of IBM UK" he said: "Unless this problem is resolved – and I understand its parent company has got some influence in the US – it is going to be extremely bad for its business."

But while promising strong action on the matter of principle, Tebbit advised lessors to stay cautious in practice.

He said: "This arrangement has been going on for some time and there have never been any problems. Permissions have been granted more or less automatically."

IBM declined to comment on Tebbit's statement, but denies that its action had been prompted by pressure from any US government source. A spokesman says it has not had official advice from the US government before issuing the letter, but did in general seek guidance on the correct interpretation of the US law.

A company representative told a meeting of the Computer Users' Association at its South Bank office last week that the letter had been issued in their interests, to warn them of the possible consequences of non-compliance. Afterwards the group's chairman, George Goodwin, said there had been no objections from members.

IBM managers met Trade and Industry Department officials at the company's request to explain why they had sent the letter. A spokesman said they had not been asked to withdraw or modify the letter and had not offered to do so.

The IBM machines affected are its advanced systems, those with a CPU bus rate of 60 million bits per second and a processing data rate of at least 20 million.

Liberal industry spokesman Paddy Ashdown has called for a Commons debate on the subject. He pressed the Leader of the House John Biffen on Thursday for time for an adjournment debate and has written to Tebbit asking for a full explanation of his policy.

TEBBIT. . . . "Contrary to international law."

The Secretary of State's visit to the US was due to be made by Cecil Parkinson last autumn, the weekend after he resigned. The long-standing issue of "extra-territoriality" was already on the agenda before the IBM letter fuelled the controversy. In particular Tebbit will try to defend the position of ICL, a big user of American-made parts, from having to answer to a foreign government on its business deals.

An internal ICL memo leaked last year complained bitterly of "US technological imperialism".

In October Tebbit made clear that he objected both to restrictions on re-exports from the UK and on movements within this country. Writing in the departmental magazine *British Business*, he said: "We believe the extension of US export restrictions to the British subsidiaries of US corporations or to re-exports from the UK of goods or technology of US origin is contrary to generally accepted principles of international law. It is also unacceptable politically for authorities of another country to extend legislation to companies in the UK in ways which displace British policy and may harm employment and productivity."

■ In recent trade negotiations US officials are reported to have urged the Japanese authorities to open up to US manufacturers.

The Welsh seek help for their language

by our Parliamentary Correspondent

WELSH Nationalist MP Dafydd Wigley has been pursuing the Welsh Secretary and his junior Ministers in the Commons over the lack of facilities for computer technology in the Welsh language.

John Stradling Thomas, Minister of State for Wales, told MPs that the Welsh joint education committee steering committee, which was the agent for the microelectronics education programme in Wales, has been allocated £465,000 from central funds to cover the first three years of the programme. Comparable resources would be made available for the two additional years up to 1986. Additional funds had been provided for the purchase of a mobile caravan and accommodation for the regional information centre – £20,000 for the two projects.

The Minister said that so far the steering committee had not received applications for any curriculum development project for microelectronics which would involve the production of Welsh language material.

Lord Lyell, a government spokesman in the Lords, announced during a short debate on progress with the Alvey report that the strategy for the programme has now been completed.

The directorate planning the programme would work closely with industry to reflect the industry's own priorities and to tap expertise in government and academic institutions, he said.

The Lords also debated the Telecommunications Bill, which passed the Commons before Christmas, and gave the Bill its second reading.

Lord Bruce (Labour) claimed that the Bill was a hoax on the taxpayer, did not serve the public interest, and its main purpose was to raise money for the Exchequer in good time for tax cuts before the next General Election, he said.

Viscount Mersey asked about the academic standards of the UK's 122 information technology centres. Was there too much emphasis on space invaders, and what percentage of students actually got jobs in the computer industry, writing games or otherwise? He wanted to know.

Osborne falls in with IBM

by John Riley

PORTABLE microcomputer manufacturer Osborne Computer has latched itself on to IBM's apron strings with the launch last week of its long-awaited, IBM-compatible, portable microcomputer. At the same time, Osborne also announced new financial plans, which will result in local independence in the UK.

The new micro, called Osborne PC, is based on a 4.77MHz Intel 8088 microprocessor, with an optional 8087 chip. It offers CP/M-86 and MS-DOS as standard and has 256 Kbytes RAM expandable to 512 Kbytes. Like the Executive which it replaces, it has a seven-inch screen.

According to Osborne, it runs all IBM software without modification.

Osborne's UK managing director, Mike Healy, expects to take advantage of increased aggressive marketing by IBM. "We believe that the IBM PC will wipe out ACT's Sirius, and we'll sit alongside," he said at the Which Computer? Show last week.

He added that the machine would go into production in the UK "for delivery mid-1984". He was not able to release more details of this, other than that the manufacture of Osborne products in the UK would be sub-contracted.

Osborne suffered a severe setback in the US last year with a dramatic slump in US sales from 27,000 units a month to a figure estimated variously at between 2,000 to 9,000 a month between January and June, accompanied by large lay-offs in its workforce.

"It's a tribute to our strength prior to the crisis that we've survived it," said Healy, who is anxious to point out that Osborne has never gone under. "We've never been out of business in the UK or the US," he explains.

"The Chapter II legislation we were under has been misunderstood. It is a re-organisation device and doesn't mean liquidation."

The new financial re-organisation involves attracting local finance in the UK through equity financing, according to Healy. "There will be more local ownership and the parent in the US will become a minority shareholder."

CSC, the independent computer maintenance company, recently got the contract to provide full national coverage for repair and warranty of Osborne computers.

HEALY . . . "It's a tribute."

Americans are indicated on charge of illegal export

by George Black

TWO Americans have been indicted on charges of illegally exporting computer technology with military potential to Switzerland and West Germany.

On January 13 a grand jury in San Francisco returned a 23-count indictment against Mildred Elizabeth McKee, of Redwood City, California, and her business associate in Geneva, Robert Jancow. He was named as the receiver of the unlicensed exports.

There were said to have been 12 shipments to Switzerland and one to West Germany, but their ultimate destination has not been stated. US customs and commerce special agents had been investigating the case for two years as part of a general attempt to stop sensitive technology reaching the Eastern bloc.

Commerce department officials described the equipment as "state of the art with significant research and development applications". It has been reported to include Vector Graphic computers, Tektronix plotters and terminals, and some Hewlett-Packard tools. Jancow was said to trade in electronics gear through a Swiss company called Instrumatic.

Both McKee and Jancow are charged with violating the Export Administration Act and the Arms Control Act.

Both could face five years' jail and fines of up to $100,000 on several of the counts involved.

■ The Swedish government has said Digital Equipment can buy back the Vax mini which the Swedes had impounded, allegedly en route to the East. The Swedes had refused it an export licence, saying it was war material.

Tailor scotches micro plans

THE sacking of 48 computer staff at Tesco Stores has proved the final straw to break Hepworths' plans to move into microcomputer retailing. The big UK tailor was ready to sell IBM and NEC computers through some of its 300 high street stores in partnership with systems firm Data Logic.

"We've put the plans on ice, because the market is too volatile, as the Tesco sackings have shown," says Martin Chatwin, head of Hepworths Computer Services.

Data Logic marketing director Bob Thorley says his company has separately come to the same conclusion. Data Logic is now putting together a strategy for workstations and systems from its big US parent, Raytheon.

The Tesco sackings came at the start of the year. They involved 10% of the company's computing division, including two top men in the microcomputer retailing business.

CDC swings into third party sales

McGARVIE . . . "We will act in a pollenating function."

by John Riley

US MAINFRAME and peripherals manufacturer Control Data (CDC) is to sell third party software and microcomputers as part of its strategy to expand its services organisation.

Campbell McGarvie, Control Data's director of services, says this is just one of the company's objectives for 1984. There are also plans to boost the company's training system, Plato, to set up alternative distribution channels, and to take over or make joint venture deals with other companies, especially software companies.

"We will become vendors of non-CDC software to non-CDC users," says McGarvie, "and will sell other people's micros."

He explains that he expects to look at "smaller software establishments without a marketing vehicle. We will act in a pollenating function – taking developed software from smaller organisations and applying it to larger organisations on a vertical basis."

That is the philosophy behind Control Data's announcement last week of software deals with two Californian software companies, Via Computer and PFR Engineering Systems, to market respectively a financial modelling package for micros and petrochemical applications software.

McGarvie also confirms Control Data's commitment to Plato, the computer learning system, developed over 18 years at a cost of $800 million.

Control Data will use its S-Series micros from its Leeds-based subsidiary, Syntime, as delivery systems for Plato and extend its applications into the smaller business section.

"We aim to make Plato more competitive by offering it on micros for the office, although it can still be put on mainframes. It is a different approach, but the organisation will remain intact."

McGarvie gives few details about the move into microcomputer sales, saying that negotiations are in progress. The company already sells one Mbyte disc drives to the IBM PC market.

Revenues for Control Data in the UK were up overall from £117 million in 1982 to £140 million in 1983, according to McGarvie, and all four sectors – the magnetic media operations, computer supply operations, and the hardware and services businesses – showed increased revenues.

However, the target of doubling the installed mainframe base to 32 during 1983 has not been reached. There are 19 sites in the UK, mostly very large systems. McGarvie attributes this to the later than expected launch of the bottom end mainframes last year.

"We will see a big thrust into the small and medium sized mainframe market this year," he says.

Japanese threaten IBM's top system

by Keith Holder

IBM's top-of-the-line 4300 mainframe system is under attack from a Japanese built, plug-compatible rival, only months after its debut.

Hitachi will make its latest processor available in Europe from the second quarter through marketing agreements with BASF and National Advanced Systems. The new system is designed to outperform the IBM 4381 and offer a better upgrade path to larger machines, comparable to IBM's 308X series.

Two versions are available each offering a capacity of three or four mips, expandable to 15 mips. They will also support all known operating systems, according to BASF, which has called its machines the 7/71 and 7/72.

Barry Graham, NAS-European systems director, says there is a market for the machines, which NAS calls the 8020 and 8030, with users who are looking at long-term investment from a 4381 machine.

Both are hoping to exploit what they see as weaknesses in IBM's upgrade strategy for 4300 users.

The upgrade path for 4300s is a sensitive issue, even among IBM's faithful. George Goodwin, of the IBM user group, says there is discontent in two areas.

There is pressure by IBM for users to adopt MVS, IBM's flagship operating system, for any future systems, which is not always what the users want, Goodwin says.

"There are a lot of 4300 users running VM and DOS/VSE who are not at all enthusiastic about IBM's bigger ranges because they want to follow other paths."

The second problem is purely mechanical, involving a change from air cooling to water cooling for the 308X series, which can disrupt departments and impose a further financial burden on the user. This step can be postponed, or eliminated altogether, using PCM processors. The entire BASF range, for example, is air cooled.

Goodwin says any uncertainty or discontent by users can only provide increased opportunities for PCM companies to peddle their systems to the disaffected.

The quick response to the 4381 by BASF and NAS serves to underline the need by PCMs to get their equipment on to the market as soon as possible.

"The market is a constantly moving target," says Rolf Brillinger, European marketing manager for BASF.

"If you can't guarantee a two-year life for a product, before the need to update, then it is just not worth doing."

The new machines close a gap in both companies processor ranges, between models, designed to compete with IBM's 4341, and those aimed at the 308X series.

They also take away the temporary performance advantage IBM gained when the 4381 was launched.

Systems analysis training demand grows

■ From front page

development techniques such as LBMS (Learmanth and Burchett Management Systems). Gordon Ewan, head of Cosit, the Computer Services Industry Training Council, says this means increased demand for training in high level management and systems design techniques. "The basic technical training market is quite well cracked now, and people are moving up the scale," says Ewan.

The overall boom in training is producing a shortage of skilled teachers, Ewan adds. "Training companies are finding out a bit of what they've been telling the industry about staff shortages."

Another big growth area has been in sales training, as the industry realises the importance of marketing. Some of the upmarket suppliers of business packages like Peachtree now insist that their dealers take training in sales and installation.

The survey, based on returns of questionnaires from 400 NCC members, shows that the training market it growing in real value at about 5% per annum, and should continue in the next two years.

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The Complete Computer Organisation

Software house gets a tonic

VENTURE capitalist Alan Patricof Associates has injected £500,000 into software house Package Programs Limited for a 25% stake in the company.

Roy Taylor, chairman of Package Programs, says: "In recent years we have had 50% compound growth and that was putting a strain on our own resources."

The cash will be used to maintain that performance. Taylor retains a 66% stake in the company, and Ronald Cohen of Alan Patricof gets a seat on the board.

In the year to September 1983 the company reported turnover up 47% at £3,975 million. Taylor is looking for £6 million in the current year and £10 million in 1985. In 1983 exports contributed almost £1 million, and Taylor sees overseas business continuing to expand, especially in the Gulf.

Package Programs was set up in 1970 – and it claims to be the biggest supplier of financial and management information systems in the UK, numbering "40% of the top companies in the stock exchange listing" among its customers.

The company is licensee for US software houses, including Software International, Cyborg Systems, and Execucom.

Alan Patricof's high technology interests in the UK include an investment in Sinclair Research and a 15% stake in Cawdor, the holding company of Future Computers and micro distributor Encotel.

It was an original investor in Unix systems distributor Sphinx, and recently joined in a £1 million second round funding of the company with Abingworth Ltd and the Olivetti venture capital fund.

TAYLOR . . . "In recent years we have had 50% compound growth."

IBM bumps up profits by 24%

by Dave Madden

THE IBM roller-coaster shows no signs of slowing down. It has just posted a 24% increase in 1983 fourth quarter and full year profits.

The company reported net profits for the year up 24.1% at $5.5 billion, and turnover up 17% at $40.2 billion. Operations outside the US produced net earnings of $2.2 billion on turnover of $17.1 billion, against $1.6 billion and $15.3 billion respectively, in 1982.

IBM chairman John Opel says: "Our product line is strong throughout and we continue to see strong demand for it worldwide." Not surprisingly, he remains "optimistic" about IBM's prospects in 1984.

The results match Wall Street's more optimistic expectations. IBM continues to benefit from the shift away from rental sales to straight purchasing of equipment. Rental income fell 17% to $9.2 billion, while direct sales rose almost 40% to $16.8 billion.

Net profit margin on turnover was 14% in 1983 in comparison with 13% a year earlier. This improvement was strongest overseas, where margins rose from 10.5% to 13%.

But there are signs that this will not continue into 1984. Operating margins in the fourth quarter were slightly lower than the same period in 1982 – which might reflect IBM's increasingly aggressive pricing, and the growing impact of high volume, low margin products on its business.

The quarterly results show a consistent rise in earnings throughout the year against 1982. In the last quarter profits rose 24.2% to $1.9 billion on turnover up 16% at $12.9 billion.

At the end of 1983 IBM gave a particularly "bullish" presentation to New York stock analysts, predicting a 14% increase in sales in 1984 and a tripling of personal computer shipments. That could mean that IBM will move two million personal computers this year, and there is no reason to expect that the company will miss its targets.

IBM disclosed that its non-operating income had risen from $94 million in 1982, to some $267 million last year, but the company would not reveal how much of that had come from Hitachi. Hitachi is reported to have agreed to pay IBM $300 million as part of its settlement in the "Nip Sting" secrets suit.

BCS seeks CAD group ideas

by Keith Holder

FLAGGING support for the British Computer Society's Computer Aided Design Group has prompted the society to canvass its members for ideals on revitalisation.

It is hoped that suggestions of topics for a planned meeting will spur CAD experts into more vigorous support for the group.

The decline in interest could be linked with the economic climate, where companies and individuals are more concerned about making a living, and not about society clubs, says Barry Barber, vice-president of the society's specialist groups.

The BCS is actively supporting the group, because of the importance of CAD to industry, he adds.

The group gives members the chance to organise meetings and publish monographs on any relevant topic. BCS finance can be obtained to start up functions, though the society hopes that groups will become self financing, with revenue from meetings.

The advantage of membership, says Barber, is that it gives people the chance to get involved with issues and topics which they could not do in ordinary employment. It costs around £15 per year.

DEC hopes All-in-One sales will help figures

by Philip Hunter

DIGITAL Equipment hopes that a recent surge in demand for its All-in-One integrated office automation system will restore the profitability lost last year. The company suffered a slump in profits in 1983, partly because of poor sales of its DEC Professional workstation and confusion over future product strategy.

But worldwide sales of the All-in-One system, based on the Vax mini series, have reached 600, worth around £150 million, since the launch last year, giving hope of better financial results this year.

In the UK 40 systems have been sold, including an order from ICI worth £500,000 but likely to reach several million pounds.

Many of the systems supplied so far have been to large companies evaluating office systems, and much bigger orders could follow if trials are successful, according to a DEC spokesman.

A typical All-in-One system would have a DEC Professional 350 workstation, a Rainbow 100 Plus personal computer, the DECmate 2 word processor, and a VT200 dumb terminal, all linked to a central Vax processor and costing around £250,000.

But a user can begin with a single workstation for £10,000 and build upwards.

Users are offered electronic mail from a terminal or personal computer and can run standard business packages on the Rainbow.

PARFITT . . . "It is time for big firms to make plans for how they are going to comply."

Lambeth will be the first to have data protection officer

by Nuala Moran

LAMBETH Council in London is to become the first in the country to appoint a data protection officer. The person who gets the job will be responsible for looking after the interests of all the people whose personal details Lambeth has on its computer and manual files.

Phillip Carrington, Lambeth's senior assistant director of management services, says the decision to set the post up was made for two reasons. "The requirements of the data protection legislation in the pipeline will force Lambeth to create such a post; and in any case the council feels strongly about safeguarding information. We are also concerned about the availability of information to the people to whom it applies.

"The post of data protection officer is viewed as a high priority job because, inevitably, as a big local authority we hold lots of information."

The duties of the data protection officer will include registration of all Lambeth Council's computer systems under the Data Protection Act. It will also involve co-ordination of the procedure for dealing with requests for information and consultation with trade unions.

■ *George Black adds:*

It is the fear of the academic world that students could have the right under the proposed Data Protection Bill to investigate their own markings in exams by teachers that has led to rumours of educational authorities preparing to take some records off the computer.

Universities are said to feel strongly that their students should not be allowed to demand statistical evidences for their grades. Critics of the Bill have been using this as ammunition for their case, saying the Bill will not only not protect the individual but will prevent progress towards computerisation.

Some have said that the only effective data protection measure would be one that included clerical records.

This is not the view of ICL's data protection manager John Parfitt. "To include clerical records would have made the whole thing hundreds of times more complicated and would have aroused tremendous opposition," says Parfitt. "It was never likely to happen. The shape of the Bill is now set and it is time for the big firms to make plans for how they are going to comply with it."

The Bill, which has had substantial amendments in the Lords already, was expected to be introduced in the Commons this week, where its passage may be smoother than in the Lords. Its provisions are to be implemented in phases.

The registration period of six months now looks likely to be from the autumn to the spring of 1985. The full effects of it will not be felt until the autumn of 1986. A recent survey by Brunel University reflected a general lack of awareness of its implications and a feeling that it was too far off to bother about.

But Parfitt believes any company with over about a £20 million turnover ought to be considering how it is going to register its data, as a single "bulk" registration will be inadequate.

He is making a video for ICL managers and supervisors to explain the problem to them.

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SALES BRIEF

Philips picks up £3.2m Austrian deal

PHILIPS Data Systems has scored one of its biggest terminal orders in a £3.2 million contract with Austria's largest bank, the Creditanstalt-Bankverein. The order calls for 1,100 P3500 office workstations, which will be linked to a central mainframe.

The P3500 offers word processing and a range of eight-bit business software. Philips says that future options will offer 16-bit processing with full 16-bit addressing based on the Intel 80186.

Gas plant order

PERKIN-ELMER is supplying two 3250 superminis worth £350,000 for data capture and process control on a natural gas liquid separation plant being built by Shell UK. The order is part of a £3 million contract won by Applied Automation UK to supply the whole system for the plant, due to start operation later this year at Mossmorran in Scotland.

Printing cheques

PRINTING specialist Rochford-Thomson has won two export orders worth a total £60,000 from Spanish banks for computer-controlled cheque printing machines. Banco Exterior d'Espana of Madrid has ordered two Westcode printing machines, and Caja Ahorras do Menresa is buying a Westcode 1800 printer plus cheque book binder.

Corda beats HP

FINANCIAL software house Coda, of Leeds, has been to Hewlett-Puckard to a contract for an accounting system from Brunel University. Coda has already sold its accounting package to other universities including Birmingham and Sheffield, and has supplied payroll systems to several leading corporate users of HP and Digital Equipment hardware, including Unilever and Trusthouse Forte.

IBM first

IBM's first UK customer for its £78,000 RS1 robotic system is BL Technology, which decided to buy the product after three months of trials at BL's Longbridge laboratory. The RS1 system is not yet part of the main IBM product range, being for test marketing only, but in the US it has been superceded by the 7565, which is a main line product.

Clearing maps

HARRIS has won a $20 million contract from the US Air Force for an image processing system to remove distortion from aerial maps. The Universal Rectifier System processes two million image data units a second, rectifying geometric distortion caused by lenses being out of focus and by the tilt of the sensor relative to the ground.

Vets for Jaguar

FERRANTI Computer Systems has supplied Jaguar with its Vets vehicle testing system in a £250,000 contract. Vets will test electrical circuits and components via two sensors clipped to the car battery, with information being displayed in real time on a video screen.

Patient system

BUTEL Business Systems is to supply a £300,000 patient administration system to London's Cromwell Hospital, one of the largest private hospitals in the UK. The system will have 50 terminals distributed from a Data General MV/8000 computer.

FOSTER . . . "The US will be a very large market for us."

ACT talks to US firms over Apricot

by John Kavanagh

UK MANUFACTURER ACT is negotiating with 20 "major companies" in the US over OEM deals on its Apricot microcomputer. The company expects to clinch these agreements this year so that US sales can build quickly to 10% of its output in 1985.

This marks a change of approach to the US by ACT. Initially it aimed to appoint one or two distributors, but after getting 2,500 trade inquiries at the US Comdex exhibition at the end of last year, it swopped to OEM outlets. These companies will sell the Apricot under their own labels.

"It could take longer to set up OEM deals, but they are more substantial than distribution agreements," says ACT group managing director Roger Foster. "These arrangements will put us in the position to attack the US properly."

Foster says the prospective OEMs are all big national companies. Most of the names are internationally known. The include computer manufacturers.

He compares ACT's approach with that of US manufacturer Convergent Technologies, which sells solely through OEMs. Convergent Technologies' customers include huge companies, such as Burroughs, NCR and GEC.

Foster says the Apricot has won a "phenomenal" response in the US, both at Comdex and in computer magazines. "The US will be a very large market for us," he says. "The deals will take six to nine months to set up, but next year I'd like to see the US accounting for 10% of our Apricot business."

The Apricot was launched last summer. By the autumn, production at ACT's factory in Glenrothes was running at 2,000 units a month. That was set to double by early this year – but Foster says the company now expects to ship 75,000 machines in 1984.

He says ACT is still committed to the Sirius, made by troubled US firm Victor Technologies. ACT has made the Sirius the UK's best-selling business microcomputer. "It's still going exceptionally well," Foster says.

Meanwhile Swire Systems, a Hong Kong firm jointly owned by ACT and Cathay Pacific, is stepping up negotiations over building the Sirius in the Far East. Swire Systems executives were in the US last week to talk to Victor management.

Security dealer sues Burroughs supplier

by Dave Madden

HAVARD Securities, a City-based licensed security dealer, is suing Gordon & Gotch Computer Centre Limited, a Burroughs Independent Sales Organisation.

Havard alleges that a Burroughs B90 computer system, recommended and supplied by Gordon & Gotch, has never done what it was supposed to do. The company is pressing for the earliest possible hearing in the High Court.

Managing director of Havard, Tom Wilmot, says that his firm is claiming "substantial damages" of "not less than £100,000". He insists that he is taking legal action as a last resort after prolonged representations to both Gordon & Gotch and Burroughs.

"We have used Gordon & Gotch for some years – so we went to them for a modern system. So far it has cost us £60,000 and taken a year and a half, and we still don't have a working system – our business if growing spectacularly at the moment so we need one," says Wilmot.

According to the company, not only "are the response times ridiculous if you use more than one screen at a time", but applications such as cash entry and stock recording systems do not meet requirements, and support services are inadequate.

David Smith, finance director at Gordon & Gotch, confirms that "there is a dispute with Havard", but he would comment no further, other than to say that his company has a number of B90 installations and had found the product "quite successful".

Harvard Securities is a licensed dealer in securities within the UK – it runs an "over the counter" market in shares of unquoted companies.

IBM puts stamp on Unix system

by George Black

IBM HAS put its firm stamp on Unix System III as a new standard operating system for the Personal Computer. And it has thrust the small software house that created it, Interactive Systems, of Santa Monica, California, into the limelight.

The system, to be called PC/IX (personal computer interactive executive), will be on sale in the US for $900 in April and is expected to run in parallel with Microsoft's MS-DOS, the current main operating system for the PC. A date for its release in this country has not yet been announced.

Staff of Logica, which is heavily involved in the Unix market, have seen the IBM product in the US and report enthusiastically on it. They say it is fast and comprehensive and they heap praise on the achievement of implementing it on the Intel 8086 chip.

There is now speculation about IBM's plans for a Unix version on its 4300 mainframes, but it is by no means certain that this will also come from Interactive Systems. IBM-watchers assume that the industry leader has a number of Unix ventures under way, including several at American universities, and is keeping its options open.

IBM is also keeping the market guessing about the operating system for the forthcoming Popcorn machine, believed to be Intel 8186-based, and informed sources say the author will not be Microsoft.

The immediate effect on IBM's announcement will be to take the heat off the transition from Unix System III to System V. After the leading chip makers declared their intention to support System V, hardware manufacturers feared that IBM might leap straight to that version. This would have forced them to rush to System V when they had barely finished the switch from Version 7.

Logica's Hector Harte comments: "IBM's strategy will change manufacturers' views of the urgency of development. The result will be that it will be well into 1985 before the products start to come out that will make System V the standard."

Harte does not think that IBM's PC/IX will have any great impact on the status of Microsoft's commercial Unix System III lookalike, Xenix.

PC/IX is the brainchild of a team led by Brian Lucas of Interactive. The firm was one of the earliest in the commercial Unix field in the late 1970s. Its effort was spearheaded by two ex-Bell Labs men, Heinz Lycklama and Ted Dolotta. Last autumn it raised $10 million capital to back its research plan, aided by London broker Hoare Govett.

Interactive president Thomas Cull says he does not believe PC/IX will in any way reduce IBM's commitment to Microsoft's MS-DOS.

Acorn makes half-price disc offer

by John Kavanagh

UK MICROCOMPUTER-manufacturer Acorn Computers is offering to take back cassette tape versions of its software in exchange for half-price disc versions.

The launch of the service comes a month after Acorn took *Personal Computer World* magazine to the High Court to prevent an article telling users how to copy programs from cassette tape to disc. The magazine paid £65,000 in an out-of-court settlement.

But Acorn says the introduction of the service has nothing to do with the High Court action.

"We have been planning the service since October," says David Johnson-Davis, "but we would have objected to the publication anyway. It gave step-by-step instructions for non-technical people."

Personal Computer World claimed the information was already provided by the Micronet 800 software and information service, available through the national Prestel viewdata network. Johnson-Davis says Acornsoft has complained to British Telecom and the information has been removed.

THE DIFFERENCE BETWEEN EXPANDABILITY AND HOT AIR.

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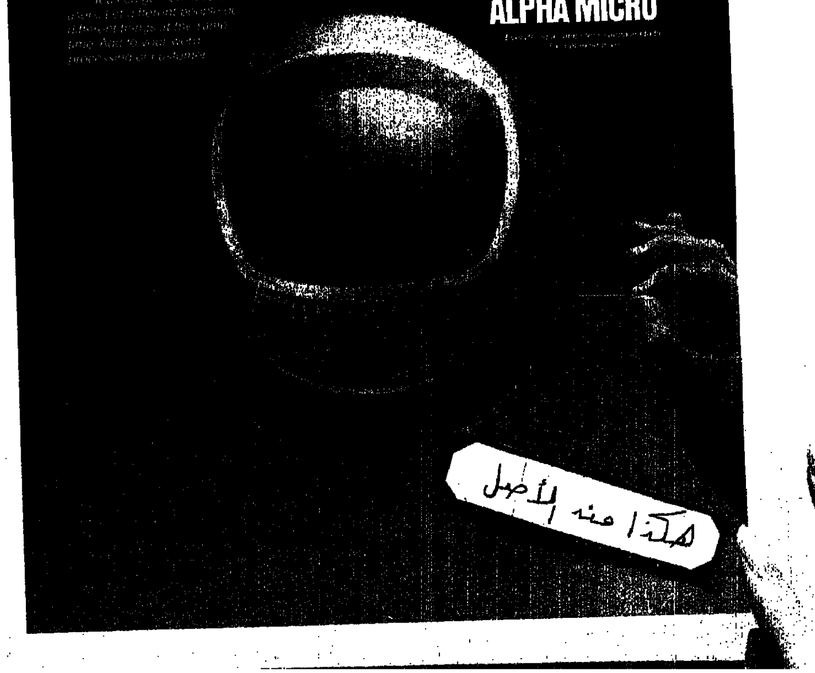

Intel settles its copyright case

by Philip Hunter

INTEL has settled its copyright dispute with Nippon Electric Company (NEC) over unlicensed second sourcing of microprocessors.

Terms of the settlement have not been disclosed, but NEC is understood to have agreed to stop making the 8086 16-bit processor, while being allowed to continue second sourcing the 8080 and 8085 eight-bit families.

This would mean that NEC no longer has a 16-bit processor, and could be a leading contender to second source the new NS16000 16 and 32-bit family of chips from National Semiconductor. But NEC would not comment on the position.

Meanwhile Intel is putting pressure on another Japanese company Mitsubishi, to come to a settlement over second sourcing of chips.

"Both Mitsubishi and NEC have made copies of our processors that violate copyright protection," says Dave House, Intel vice president and general manager for microprocessors.

"Mitsubishi has reverse engineered the product and would like to licence it."

With ever increasing demand for 16-bit processors, and longer delivery times, Intel is itself under pressure to find another recognised second source, as well as to step up its own production.

House admits that Intel is going to find it difficult satisfying demand this year.

"We think we're going to keep our customers afloat, but the marker's going to be pretty tight."

House adds that Intel is investing heavily this year to expand its chip making plants in the US.

Intel's official second sources for its 8086 16-bit family of processors are Advanced Micro Devices in the US, Siemens in Europe, and Fujitsu in Japan, with Mitsubishi possibly to be added to the list. In the US, Harris also produces a CMOS version of the 8086.

Intel is the world's leading supplier of 16-bit processors, delivering 14 million 8086s in 1982. IBM has a 17.5% stake in the company, with the option of raising its holding to 30%.

HOUSE . . . "Mitsubishi would like to licence it."

Young French say they're unhappy

by Jack Gee

FRENCH computer specialists are young, got bigger salary increases in 1983 than people in other industries, earn 153,000 francs (£12,400) a year on average, but are dissatisfied with their income and expect a drop in living standards this year, according to a national survey.

Although women account for 37% of France's working population, they represent only 15% of staff in the computer industry – compared with 18% a year ago – and are even fewer in the top echelons.

Industry weekly *O1 Informatique Hebdo*, which has conducted the investigation about working conditions, says that although 29% of analysts and programmers are female, they account for only 13% of project chiefs and 4% of managers.

Many specialists holding down jobs as departmental chiefs claim they are earning salaries at the level of an analyst programmer.

O1 Informatique says that more and more jobs are being offered by service forms.

These totalled 30% of all advertised vacancies last year.

Service firms employ about 15% of France's computer specialists.

The average age in the industry is 32. This marks no change over the past 10 years. With an average salary of 153,000 francs (£12,400), the computer specialist got a 10% rise in 1983 while national wages increases were limited to 8% by the government in the framework of its austerity programme.

However, although the computer specialist enjoyed about a 0.5% improvement in his living standards last year, he is less optimistic about 1984, the survey reports.

The 100,000 francs a year salary mark, equivalent to £8,000 in Britain, was topped by 78% of people in the industry last year. In 1982 only 68% passed this level, 53% in 1980 and 28% in 1977.

Those who earn more than 100,000 francs include 98% of managers and sales people, 96% of project leaders, 61% of programmer-analysts and 55% of programmers.

O1 Informatique says that 41% consider they are earning more than people with comparable qualifications in other industries and 44% felt they were getting equal salary treatment.

Staff earning under 130,000 francs (£10,400) a year said they were unhappy in their jobs and those with salaries below 107,000 francs (£8,560) reported dissatisfaction with their earnings.

When computers make life harder

by Philip Hunter

COMPUTER technology does not always make life easier in the office, and can actually increase costs, according to a survey* of leading users of office systems.

"Costs can increase because the interface to equipment becomes more complex. In consequence people don't understand it and more training is required," says Peter Lines, principal consultant with Input, which did the survey.

Another problem is that people quickly take word processors for granted, and assume that mistakes are automatically corrected. "In one case, people were submitting shoddy reports because they felt the new technology could solve the problems," says Lines.

"There is also a general warning from our survey that central word processing can cause turn around problems. By maximising productivity in one area, it can reduce it in others."

Three companies that took part in the survey reported that installation of word processors had definitely resulted in extra cost.

The survey attempts to find out how companies are justifying the cost of office automation, whether stand alone word processors, or more sophisticated office systems with local area networking and electronic mail. As systems become more complex, costs are increasingly hard to justify, says Lines.

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Supermini maker goes downmarket

by John Riley

US SUPERMINI manufacturer Perkin-Elmer extended down into the microcomputer market with the launch of its Motorola 68000-based workstation at the Which Computer? Show last week.

Called the 7350 Professional Computer, and offering a Unix System III-based operating system, it offers compatibility with Perkin-Elmer's Series 3200 32-bit minicomputers.

"This rounds out our product strategy," says Fred Mascarenhas, Perkin-Elmer's UK marketing manager. "We now cover the market from micros to mainframes – from 0.3 to 21 mips – with one industry operating system across the range.

"Our strategy contrasts with that of IBM and Digital Equipment," Mascarenhas adds. "IBM has a lot of different operating systems, so that software that works on small machines won't work on large ones. DEC's total strategy is confused with no common compatibility between its three different micro systems, its PDP and Vax minis and its DecSystem 10 and 20s."

Perkin-Elmer's 7350 Professional Computer comes in three configurations: a single-user workstation with 320 Kbytes user memory and 15 Mbytes of Winchester disc storage; a colour graphics workstation with 445 Kbytes user memory; and a multifunction cluster controller console version which enables three terminals to be added, although these do not have access to graphics facilities.

Mascarenhas claims that the colour graphics version is the first to be based on the 32/16-bit 68000 chip. He says the 7350 machine has "soft" programmable keys and expects to ship 300-400 machines this year – mainly to large end users and existing customers. A typical price for the single user version is £7,430 and that of the colour graphics workstation is £9,200.

The launch of the 7350 marks an extension of Perkin-Elmer's push into the commercial market, initiated last October when it signed up Brighton-based ABS Computers, itself a minimaker, as an OEM.

Several applications packages come with the machine. These include Ace Microsystems' Lex/32 word processing package, Access Technology's Supercomp-Twenty spreadsheet system, and Precision Visuals' DI-3000 and Grafmaker graphics packages.

MASCARENHAS . . . "This rounds our product strategy."

Small firms get free export advice

SMALL firms trying to export can get £100 worth of free advice from Technical Help for Exporters, a 60-strong consultancy backed by the British Overseas Trade Board and the British Standards Institution.

The organisation provides information on overseas regulations, codes of practice, technical standards for manufactured goods and so on. The offer runs until the end of the year. It applies to UK manufacturing firms with up to 200 staff at the site concerned.

Technical Help for Exporters is at the BSI, Linford Wood, Milton Keynes MK14 6LE. Tel: (0908) 320033.

HP distributor

HEWLETT-PACKARD has appointed Midlectron to distribute and support its micro, the HP150. The deal will be worth at least £4 million in the first year. Midlectron is to establish a network of 40 dealers in areas where HP is not represented. The two companies have already done business together, with Midlectron distributing HP printer and plotter products.

Access widens

USERS of IBM PCs and compatible micros will soon have access to a wider range of machines on Ethernet local area networks following an agreement on network software compatibility between Bridge Communications and 3Com. Sphinx, which holds UK marketing rights for Bridge products, says that 3Com, which makes Ethernet boards for the IBM-PC, has made its software totally compatible with Xerox Network Systems protocols used by Bridge and others.

Toshiba dealers

TOSHIBA disbributor Scan Computers has signed the first of a nationwide chain of dealers. Hart Computers will sell Toshiba T-300 micros and P1350 printers in London and the south. Scan computers was appointed sole UK distributor for Toshiba last September and plans to set up a nationwide network of dealers by the spring.

Texas manager

TEXAS Instruments announced the appointment of a new managing director, Peter Van Cuylenberg, last week. Aged 35, Van Cuylenberg has worked for Texas Instruments since 1973, joining them from BMI, where he worked in electronics. He replaces Rod Attwooll who left in December 1983 to join Systime. Van Cuylenberg has worked for TI in Austin, Texas, where he was in the home and personal computer division, and in Nice, France, where he was responsible for European strategy.

HP attacks Korea

US COMPUTER and instruments firm Hewlett-Packard is stepping up its attack on Korea – the second fastest growing market in the Far East – by forming a local manufacturing and sales company. Samsung-Hewlett-Packard will be 55% owned by the US firm and 45% by a local company, Samsung Electronics, which has sales of $900 million. The partners say the deal puts them in a strong position to win a lot of the business expected when Korea hosts the 1986 Asian Games and 1988 Olympics, as hotels, shops and hospitals will be looking for computer systems.

Unix system deal

AT&T IS to give a shove to its System V of the Unix operating system through a deal with CP/M author Digital Research. Digital hopes to build a library of applications for AT&T by the end of the year to run on several different microprocessors.

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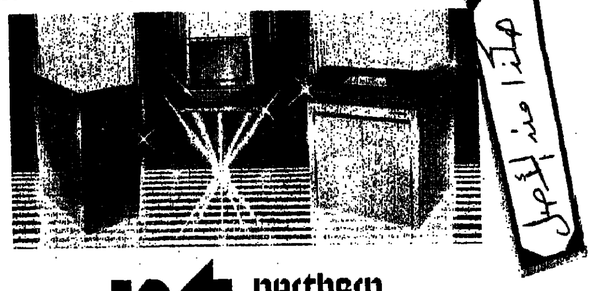

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Where computers and communications meet

Schools price war escalates

by Philip Hunter

APPLE and Commodore have stepped up competition in the UK education market by cutting the price of computers to schools by about 30%.

The move comes as secondary schools are having to pay more for computers with the end of government subsidies.

Secondary and primary schools can now buy an Apple IIe, processor, disc drive and monitor for under £800. The recommended retail price is £1,200.

Commodore is offering schools its 64 computer, with disc drive and the Logo education language, for £300, compared with recommended retail of £472. A monitor is extra, although a standard television set can be used.

Research Machines, a big UK supplier of computers to schools, is not cutting prices, but is offering free software to schools which buy its workstations and spend at least £2,500. The free software includes the word processing package Wordstar, the languages Pascal, Logo and Basic, and the Quest database enquiry language.

A basic 480Z standalone computer without the software, but including floppy disc drive and colour monitor, costs £585.

Sinclair Research is not cutting prices to schools either, but its Spectrum is still among the cheapest of the leading education micros. It costs £472, including a colour monitor.

Acorn, the other leading supplier of computers to schools, is also leaving its prices unchanged for the moment. Its BBC Model B machine costs £650, including colour monitor.

Primary schools can reclaim half the purchase price from the government for three UK-made machines – the Spectrum, BBC, and Research Machines' 480Z.

A similar scheme for secondary schools ended in December.

■ While competition bots up in the UK schools market, the BBC has won its largest single US order for 170 of the Acorn-built machines. A secondary school in Phoenix, Arizona, chose the BBC computers in preference to offerings from Apple and Atari, both US companies.

PLATT . . . "Make science compulsory for girls up to 16."

Crusaders want more women

by Nuala Moran

A CAMPAIGN has been launched to bring more women engineers into UK industry, where only 1% of the country's professional engineers are women, compared to 9% in the US.

Opening the campaign, Sir Kenneth Corfield, chairman of STC, said: "Industry will be greatly helped if we stop ignoring the vast resources of talent which girls can supply to the engineering dimension."

Sir Kenneth was speaking as chairman of the Engineering Council, which is sponsoring Women Into Science and Technology Wise 84 jointly with the Equal Opportunities Commission. Education authorities, schools, colleges and 200 companies have been invited to take part.

The aim is to draw attention to career opportunities for women in engineering and other professions requiring science qualifications, and to create an environment attractive to and supportive of women.

A report from the Engineering Industry Training Board released at the same time confirms the need for the Wise 84 campaign. It shows that over 90% of women employed in the engineering industry work in relatively unskilled jobs which are mostly under threat from new technology.

According to Sir Kenneth: "The chief executives of companies, personnel executives and management are key people in our attempts to change attitudes to girls. Opportunities are good in engineering for all young people – and girls must play a part. We need to persuade key management people to come round to our way of thinking."

The Engineering Council made a commitment to attract more women to the industry in September 1982.

Corfield says: "We are committed to encouraging more high quality people to enter engineering, and, as part of that campaign, are making special efforts to attract more women engineers.

"We need to change our attitudes towards girls and what they learn in school."

Baroness Platt of Writtle, chairman of the EOC and herself an engineer, said it should be compulsory for girls to study science subjects up to 16. "We have to get away from the idea that science, engineering and technology are the sole province of boys and men".

Secretary of State for Education and Science Sir Keith Joseph says a policy statement will be published later this year on science curricula in schools.

Events already planned as part of Wise 84 include residential courses and careers conventions.

Girl technician award

FRANCES DAGG was chosen last week as girl technician engineer of the year. The award is made to try and persuade more girls to take up a career in electrical and electronic engineering.

Dagg, 23, is a software development engineer at GEC Telecomms in Coventry. Although her work involves all aspects of computer programming she is mainly concerned with writing CAD programs for electronic design applications and helping hardware engineers to use them.

The award, £250 and an inscribed rose bowl, was presented by the chairman of the Equal Opportunities Commission, Baroness Platt of Writtle.

DAGG . . . Award winner.

Commodore names new man

by John Kavanagh

US electronics and microcomputer firm Commodore has named the head of a big industrial company as president and chief executive following the resignation of founder Jack Tramiel.

Tramiel resigned this month for personal reasons, but will stay as a consultant to the company.

The new man is Marshall Smith an old associate of Commodore chairman Irving Gould. Smith is president of the US end of Thyssen-Bornemisza, one of Europe's biggest industrial companies, which makes nearly everything from bottles to car components.

The US operation had a turnover of $1,000 million in 1982 – the same as Commodore last year. Smith is also on the advisory board of merchant bank Manufacturers Hanover Trust.

Gould says Smith has an "excellent reputation" for manufacturing, finance, marketing and motivating people. The two have worked together since 1978, when Thyssen-Bornemisza bought Interpool, a company in which Gould was involved as chairman and shareholder.

Commodore needed a "professional executive" because of its size, says Tramiel. Sales have increased 13-fold in six years since the Pet microcomputer was launched.

US reports suggest some big shareholders were unhappy with Tramiel's autocratic management

But US industry watcher Rosen Research says Smith's main expertise is in manufacturing – an area where Commodore is already strong.

"He looks more of a friend of Irving Gould than someone sought by Commodore," the company says.

Smith's appointment follows a new trend among microcomputer firms to appoint professional managers from outside to top posts as sales rocket.

Last year John Scully moved from president of Pepsi Cola to head Apple, while financial troubleshooter Michael Faherty is considering the top job in Victor Technologies.

GOULD . . . "Excellent record."

Frightened analyst blames the planners

by John Riley

THE European computer industry faces a "frightening" future because there is not enough long-term planning, and too much is technology and not market driven.

That view, by industry analyst Al Dunn, head of the Yankee Group's European operations, arises from an in-depth study by the company for the European Commission on the future of office automation. The Commission is currently studying the report, which at least for now is for internal use only.

The report is based on a detailed 38-page questionnaire completed by top 20 computer companies, combined with general research by the Yankee Group.

"European industry ought to be frightened," says Dunn, "it's got three years to sort itself out, otherwise we might as well all paint ourselves blue." Commenting that the Community is not stimulating marketing activity he says: "People buy solutions not technology, and you get solutions through marketing."

Among the recommendations are that there should be a common European communications networking strategy, along the lines of the Japanese industry department's strategy to the year 2010; and that standards committees procedures should be speeded up (see story on page 1).

Each government in Europe should have its own national standards harmonisation committee to make sure each country is in step and a "blueprint" is needed to help users understand their needs and help manufacturers cater for those needs.

The report is also critical of the fragmented European approach and identifies key areas in the office automation field where Europe could unite without conflict, including communications, advanced peripherals, local net-

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Disc maker moves to Dublin and diversifies

by Nuala Moran

THE leading independent supplier of disc and tape storage systems for DEC and Data General minis is diversifying into the Hewlett-Packard market.

Systems Industries of California made this announcement as it opened a 40,000 square foot factory in Dublin last week – its first move into European manufacturing.

The Hewlett-Packard market is to be exploited with the purchase of another Californian company, Qualex Technology, which manufactures tape products for HP3000 and 1000 computers.

All Systems Industries' range of products will be made at the Dublin factory. Harrold Shattuck, president of the company, says that by August most shipments for Europe will go from Dublin.

It will also supply African markets and some parts of Canada. "The tax position is such that there are some cases where it is more economical to ship from Ireland to Toronto than California to Toronto," says Shattuck.

Service and repairs will also be done in Dublin. Some repairs are now carried out at the UK headquarters in Woking, but says Shattuck, "a number of repairs require complex testing and we can't afford the equipment except in conjunction with a manufacturing facility.

"Previously parts had to be shipped back to the US for repairs so customers should see an improvement in this respect."

Irish people will be trained in California for work in the factory, and in two years' time there will be 90 employees. Shattuck says he will also develop sources of supply in Germany, UK and France for components to complete integrated manufacturing in Europe.

The factory was set up with assistance from the Irish Development Agency. A first decision would have put the factory in Wokingham, Surrey, near the UK headquarters in Woking. But UK managing director David Seaman says that, although this would have been convenient, the financial inducements to go to Ireland swung the decision.

Shattuck says the break into the HP market could take a while to get going. HP supplies the majority of the market for storage products for its minis, whereas DEC only has around 50% of the business for its minis. The move into the HP market is only part of

Oric updates home machine to cut the quirks

by Philip Hunter

ORIC Products last week began full production of a successor to its Oric I home computer.

The new machine, called Atmos, comes with a new operating system, following six months' R&D in collaboration with some of Oric's third party software suppliers.

"We have greatly improved the ROM and removed all its quirks," says Paul Johnson, Oric director of R&D.

Atmos also has a machine code program to enable the user to override the error checking facility when loading programs from cassette. Oric claims to be first with this facility.

Oric has developed a 3in micro disc drive for the Atmos, based on the Hitachi drive and giving up to 320KBytes storage at an extra cost of £200. The micro itself costs £170.

Oric says it delivered 160,000 micros in 1983 but will find it difficult to repeat this figure this year, because there are more compact

NEWS ANALYSIS

Government sets standards rolling

Last week the government accepted most of the recommendations of a report that it should overhaul its telecomms. Donald Kennett reports

THE country's biggest telecommunications user, the government, is acting on behalf of its fellow users by leading the demand for standards.

Users have often been called on to play a greater part in standards, both by participants in standards committees, who recognise the danger of wandering away from reality, and by academics who have visions of compatible products from a variety of sources being turned into wondrous new services at minimal cost.

Users have been asked to help form the standards in the first place and to demand them in the products they buy. But they reply that they haven't the time to join in lengthy standards discussions aimed at producing results beyond their planning horizons; they haven't the muscle to influence manufacturers' design decisions; and they cannot afford to wait for the implementation of standard products.

One major effort aimed at breaking this deadlock has been made by the university and research council community, which for several years has had a team working on a rationalised approach to networking between autonomous establishments.

Some of the smaller suppliers have, working from the opposite end of the problem, seen standards as being to their advantage but, perceiving a lack of interest from users, have given a higher priority to other considerations, such as maintaining compatibility with previous products.

The Department of Trade and Industry has already tried to boost information technology standards by setting up the Information Technology Standards Unit to help develop them and the Focus committee to promote them.

It has also encouraged users to influence them by initiating the formation of the Information Technology Users' Standards Association.

But none of these is likely to have as powerful an effect as the £50 million investment programme for the government civil administrative telecommunications network that was announced earlier this month. Standards are said to be more necessary for the information technology revolution because, unlike the mechanical revolution, it depends on the close interworking of its parts.

Many of the "as yet unimagined services" on which, the government tells us, full economic recovery and growth will be based, will only be viable if they are launched into an environment where large amounts of equipment have already been installed for a variety of other purposes. Users will not want to have to install new terminals or processors before they can make use of each new computing or communications service.

Many services will only be launched because the cost of running them is a marginal addition to the cost of existing ones – just as recorded information services have been added to a public telephone network primarily intended for two-way speech.

As far back as Sir Keith Joseph's days as Industry Secretary, the government advocated "enlightened procurement" as an important means of nudging industry in the right direction.

The currently planned nudge of encouragement towards the implementation of standards is not the involvement complained of by STC chairman Sir Kenneth Corfield in the field of defence procurement, where he says government specifications stifle inventiveness and design ability and lead to over-engineered uncompetitive products.

But pushing standards that have been developed outside government is a different proposition. It is still possible for publicly developed standards to evolve that are irrelevant to users' needs or that are overtaken by proprietary developments that become de facto standards. This is where the need continues for user involvement.

In fact all parties need to work against the tendency to get bogged down in too much detail and against companies that want to slow the progress to match their own development cycles. But there are many areas in which almost any workable standard would be a useful contribution.

Powerful though government procurement is as an aid to industrial development, government funds are limited and this government in particular is keen to transfer as much economic activity as possible out of government hands.

Standards are said to be more necessary for the information technology revolution because, unlike the mechanical revolution, it depends on the close interworking of its parts

The renewal of its telecommunications network provides an opportunity to make savings, at the same time as fostering desirable trends in the industry.

The report from Eosys and F International, on which the government civil telecommunications strategy is based, cost £300,000. It has already saved the government £500,000 in the year since it was presented, through the simple suggestion that British Telecom be persuaded to lower its charges for telephone extensions.

Future saving of £15 million a year are to be made by installing automatic exchanges, increasing network capacity and using call-logging equipment to keep track of outside calls.

Standards are expected to contribute to saving by making equipment more versatile, and therefore longer lived, but at the same time more readily replaced and therefore more competitively priced and less vulnerable to the weaknesses of its supplier.

At the same time, the government is not going to be much ahead of the field in buying information technology standards. Its main telecommunications requirement is for basic voice services and the explosion in its use of more sophisticated information technology is a few years away yet.

The report recommends a schedule for standards requirements that seems pretty leisurely, even in relation to the progress of the standards themselves. It is hard to imagine such a schedule giving a lead to anyone. But the lead comes from the fact that known well in advance.

A lead will also be given by the pilot projects involving various types of advanced technology. Part of the objective of these projects will be to give a clearer indication of which standards will become the most relevant and how soon.

Standards to be required by next year include telephone sockets, push-button dual tone signalling, some modem standards and the X25 physical layer and link layer protocols for access from computers and terminal clusters to packet switched data networks.

Standards for local area network interfaces are also proposed as a requirement for next year, but videotex and teletex standards are not thought to be required until the year after, despite the fact that videotex services started in 1978 (Prestel) and teletex services are to start this year.

The Treasury in its reply to the consultants' report says that individual government departments will continue to be responsible for many of their own purchases and that the CCTA (the government Central Computer and Telecommunications Agency) will continue to manage the main network and set guidelines for purchases.

But the report, and the Treasury's response to it, is likely to be a good guide to what actually happens.

The Treasury leads the way on standards.

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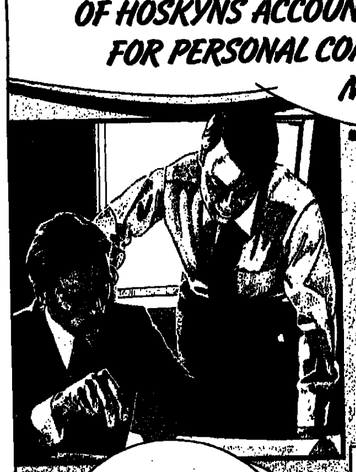

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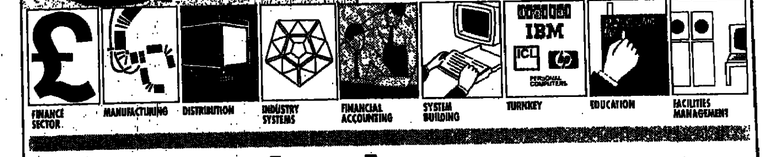

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COMPANY NEWS

DONNELLY . . . To head Dyadic.

Terminal maker buys APL house

LYNWOOD, an intelligent terminal manufacturer, has bought specialist APL systems house Dyadic Systems, for an undisclosed sum.

Hector Brown, Lynwood managing director, says the nature of the deal makes it difficult to quantify at the moment, but it was less than £500,000.

Brown says the move "adds considerably to our in-house software team". Dyadic, formed six years ago, will operate as a wholly-owned subsidiary headed by Peter Donnelly, Dyadic Systems operations manager, and it will keep its name.

Dyadic's product is an APL interpreter, Dyalog. It was developed with a £146,000 grant from the National Computing Centre.

Profits at Racal creep up

THE UK electronics sector has started 1984 as nervously as it ended 1983, with interim results from Racal and Thorn-EMI getting a mixed reception.

In the six months to October 14, Racal's pre-tax profits rose 6.6% to £50.056 million on turnover up 7.3% at £385.2 million. The company was helped by interest receivable but it suffered heavy exchange losses of £1.32 million, so taxable profits improved only £1.2 million to £48.7 million.

In a pugnacious performance, Sir Ernest Harrison, chairman and chief executive of the company, was able to sugar the pill by announcing defence radar contracts worth £57 million. The orders were won by Racal Radar Defence Systems, and are for advanced radar electronic warfare equipment for the Royal Navy and an overseas navy, and surveillance radar and command links for the Rapier air defence system.

But Harrison admits a dearth of orders for its tactical radio group from countries hit by the fall in demand for oil – which will produce a shortfall on sales this year of about £40 million. It highlights Racal's dependence on Middle East business.

On the bright side, Harrison insisted that Racal Milgo's problems in Miami, which have plagued the group for so long, are at last behind it.

Pre-tax profits for the data communications division should be up 40%, and it will be the major contributor to group sales.

Harrison said Racal now had a far broader base than previously. Its cellular radio business is "one of the most exciting things to happen to Racal" and though its losses will rise to £12 million in 1984/5, Racal expects a profit of £8 million in the year after.

Harrison says: "In this financial year profit growth will be modest," but Racal is aiming for sales of £1 billion for the first time in 1984/5.

Analysts had been looking for about £50 million pre-tax at half-time and Racal's long ailing share price firmed 5p to 208 pence in a sigh of relief that things had been no worse. But estimates of up to £135 million for the full year now look optimistic and have been downgraded to £120 million.

But no such luck for Thorn-EMI. It doubled profits before tax from £27.6 million to £55.8 million in the six months to September 30, but its shares fell 25p.

Not only has the company fallen short of the City's best guesses – analysts had looked for at least £60 million – but Thorn directors point out that the results, although a "significant improvement" must be set against a poor first half in 1982. Total sales were up £130 million at £1.3 billion.

Thorn's best performer was its consumer durable division, with strong trading in all areas of television rental and sales.

HARRISON . . . Pugnacious performance.

NCR makes centenary record profit

NCR has marked its 100th anniversary with record financial results. Net profits in its fourth quarter rose 22% to $114.4 million, on turnover up 7% at $1.139 billion. This brought net profit and turnover for the year to $287.6 million and $3.730 billion respectively.

Company president and chief executive officer Charles Exley says incoming orders are substantially up in the fourth quarter. "NCR begins 1984 in the strongest financial position in recent company history".

Honeywell up

ANOTHER venerable member of the bunch, Honeywell, has reported modest progress in 1983. Net profits for the year were $231.2 million on turnover up 5% at $5.75 billion. The company says its computer divisions have improved sharply. But growth slowed in the final quarter with profits ahead 4.4% at $91.9 million on turnover up 3.8% at $1.63 billion.

Gould close look

THE word is that General Electric is taking a close look at Gould as a possible acquisition. Gould is playing the innocent and says it is unaware of any reason for the interest in its stock in the last few weeks other than its improving business outlook.

Micro sponsor

BROKER Simon & Coates which has made quite a reputation as a sponsor of new issues on the Unlisted Securities Market – Micro Business Systems, Memory Computer and Real Time Control among them – is set to introduce Micro-Circuit Technology, which builds printed circuit boards, by way of a tender within the month.

SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

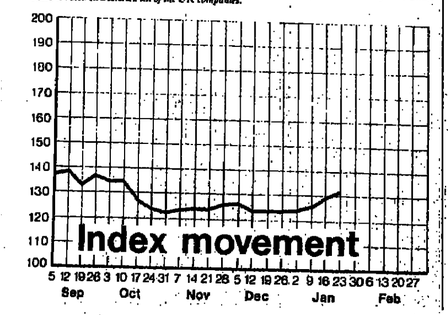
Previous published index 128.83 28/1/83 — Index 132.02 — Change +2.19

Pence 1984 High	Pence 1984 Low	London Stock Exchange Stock	Price	Change
318	308	Abingworth (10p)	318	+ 4
530	510	ACT Regp Comm (25p)	510	+ 20
648	642	Advanced Comp (10p)	468	+ 8
76	56	B Bor Kent (25p)	69	+ 1
171	155	Chrysalis (10p)	177	+ 11
144	140	Cole Group (25p)	140	- 2
450	418	CSSE (10p)	447	+ 3
290	265	DPCE (5p)	290	+ 15
210	200	Datastream (5p)	210	+ 10
816	680	De La Rue (25p)	816	+ 16
510	490	Exal (25p)	510	+ 20
688	622	Ferranti (50p)	686	+ 9
188	177	GEC (25p)	188	+ 4
95	91	ICL (25p)	95	+ 2
46	39	Kalamazoo (10p)	46	+ 5
247	240	Kode Int (25p)	246	+ 2
286	280	Logica (10p)	286	+ 4
283	280	Micro Int (10p)	283	+ 3
156	153	Microvel (25p)	156	+ 3
483	472	N'marker (1981) (50 0p)	482	- 13
2783	2680	Norsk Data	2783	+ 1
199	186	Offset & Elect (25p)	199	+ 13
1131	1050	Philips (Fl 100)	1050	- 12
233	232	Prestel (25p)	232	+ 2
32	30	Quest Auto (10p)	30	+ 1
218	197	Read Data (25p)	197	+ 13
265	246	Sec Comp (10p)	246	- 5
699	640	Systems Cap (10p)	660	+ 10
238	232	Telemetrix (5p)	238	+ 3
628	553	Thorn EMI (25p)	628	+ 20
328	326	UC&T (50p)	326	+ 2
723	708	United Leasing (25p)	723	- 17
		Unlisted Securities		
137	127	Acorn (10p)	127	+ 1
78	70	Bon Comp (10p)	78	+ 8
108	106	CPU (50p)	106	+ 6
140	130	Cifer (10p)	138	+ 6
106	100	Compsoft (25p)	100	+ 5
265	260	Feedback (10p)	263	+ 3
117	115	Hem Row Sys (10p)	117	+ 2
82	70	Imtec (10p)	77	+ 5
299	282	Inchcape Tech (25p)	299	+ 17
38	33	J & D (5p)	38	+ 1
88	88	M M T (5p)	88	+ 8
269	256	Memory Comp (50 0p)	269	+ 8
269	256	Micro Source (10p)	269	+ 4
699	610	Micro Focus (10p)	699	-
480	440	Norbain (10p)	480	-
220	215	Micro Int (10p)	220	+ 05
53	53	Redstone (10p)	53	-
267	107	NVMS (10p)	267	+ 18
270	250	Real Time (5p)	270	+ 5
156	138	Scitex & Horton (10p)	156	+ 13
80	76	SuperData (10p)	76	-
65	60	Trident Comp (10p)	60	-
127	115	Zygal Dyn (5p)	127	- 5

Pence 1984 High	Pence 1984 Low	New Issues	Price	Change
82	78	Datasaab (5p)	82	+ 6
162	156	Falcom (10p) USM	162	+ 4

$ 1984 High	$ 1984 Low	US Stock	Price	Change
2034	1834	Amdahl	2034	+ ½
2854	2734	Apple Inc	2854	-
3814	39	Auto Data Pro	3814	+ ¼
61½	60	Burroughs	61½	- ½
9⅞	7	Comp Assoc	9⅞	+ ⅛
21	20	Comp Sciences	21	-
21¾	21¾	Computrvision	21¾	- ¼
27	27	Control Data	27	-
45¾	42¾	Data Research	45¾	+ ½
14	13½	Data General	14	+ ¼
25	25	Datapoint	25	-
65¾	61½	Digital Equip	65¾	+ 1¾
2	1⅞	Elec Data Sys	2	- ⅛
13¼	12½	Gen Automation	13¼	-
31½	30½	Gould	31½	+ ¼
43	42	Honig	43	+ 1¼
46	43½	Hewlett Packard	46	+ 2½
127	117	Honeywell	127	+ 5
39½	38½	Intel	39½	+ 1¾
115¾	113¾	IBM	115¾	- 1
69¾	66¾	Littonind	69¾	- ¼
18½	17½	MDB (Mohawk D)	18½	+ ¾
28½	28¼	MBS (Mymm Bull)	28½	+ ¼
21¾	20¾	Mohawk Applied	21¾	+ ¼
8	8	Mohiker	8	-
132½	129½	Motorola	132½	+ 2¼
18¼	18¼	National Semi	18¼	- ¼
127¾	124¾	NCR	127¾	+ ¾
31½	30½	Perkin-Elmer	31½	- ¼
25	24	Prime	25	- ¼
44	43	Raytheon	44	+ ¼
24½	23½	Sperry	24½	- ¼
21½	21½	Sperry Corig	21½	- 2¾
14	13¾	Storage Tech	14	- ¼
32	31	Tandem	32	+ ¾
14¾	14¾	Tandy	14¾	-
131¾	128¾	Transtrat	131¾	+ ¾
34½	34½	Tymshare	34½	-
41½	41½	Wang Labs B	41½	+ 1½
11	10¾	Wyly	10¾	- ¼

The table shows the closing prices in London on Friday and in America on Wednesday and the changes from the previous table. Highs and Lows have been adjusted where necessary. The Share Index is based on a selected list of the UK companies.



Micros may rope in £15.5m

THINGS are looking up for Croydon-based micro maker Future Computers and stable-mate Encotel, a micro distributor. The holding company for the two, the Cawdor group, has deals worth £15.5 million in the offing centring on Future's FX IBM-like microcomputers.

The three deals close to final agreement – two with companies not named by Cawdor – will bring in more than double the group's last year turnover, says Encotel marketing manager Keith Beverton.

The best of the three for Cawdor is with "a major US manufacturer" according to Beverton. It is in fact with Burroughs' subsidiary Memorex. Heads of agreement have been signed for Memorex to manufacture and sell worldwide versions of the Future Computers machines as a communications product. This is worth £3.5 million to Cawdor over the next three years.

But as well as increasing its product range by taking on the UK-developed Future Computers machines, Memorex is to buy into the Cawdor group, taking a 15% stake worth about £2 million by Beverton's reckoning. This would give Memorex an R&D foothold in Europe.

The other two deals are straight product supply contracts. Dixon's camera subsidiary Chinon will take 4,000 FX10s and FX30s this year, for about £4 million, while another unspecified company is set to take £6 million of Future kit over the next three years.

Cawdor got going in 1982 and owns all of Encotel and Future Computers. The British Technology Group and APA Venture Capital both hold a 15% stake, the remainder lies with the group's three founder directors.

Encotel last week was dropped by US micro maker Televideo as a distributor, but Beverton plans to carry on selling and supporting Televideo kit as well as the future Computers products. He reckons sales should reach £16 million this year.

Wales gains £7m floppy disc plant

THE Welsh Development Agency, not to be out done in the scramble to attract high technology industry by the Scots – and Irvine in particular (Company News, January 12) has announced that a new UK floppy disc company is to establish a manufacturing plant in South Wales with a £7 million venture capital package.

Parrot Corporation, formed by four refugees from Chicago disc maker Wabush Datatech, originally planned to set up in that other Valley, in Northern California, until the Agency put together a financial package with private City institutions. It was one that the company could not refuse.

Parrot says it will have the first "integrated" floppy disc plant in the UK – it will make discs from base materials and will not import magnetic materials. It looks to produce 50 million discs a year.

The Agency says the £7 million deal is the biggest venture capital start-up in Europe in the last year.

Its significance – apart from the promise of at least 300 jobs within three years and perhaps as many as 450 – is the mix of public and private institutions involved in a notoriously precarious "green field" project.

Apart from the Agency the investors in Parrot are Legal and General Assurance Society (£700,000), the National Coal Board Pension Fund through CIN Industrial Investments (£700,000) and Commercial Union insurance (£300,000).

The remainder of the package comes from regional development grants from the Agency and Cwmbran Development Corporation, and selective financial assistance from the Welsh Office. But this does not include the 57,000 sq ft factory to be built by the Agency at Llantarnam, near Newport, Gwent, for an estimated £2.25 million though production will start in an existing Agency factory in Rogerstone.

Parrot expects to raise a further £2 million to buy plant and equipment on the security of its equity investment, from either a US or UK bank.

The Development Capital Group managed the private funding. It says the private sector was only tempted into such an ambitious start-up because the Welsh Development Agency had guaranteed specialist premises.

Nicholas Edwards, Secretary of State for Wales, says: "This is an excellent example of how private and public institutions can secure new developments together. It is a significant step in the accelerating growth of the most modern industries in the Principality."

US stakes it in Clwyd

AT the same time that it was funding the Parrot venture (see above) the Welsh Development Agency was realising an investment in Wilcox Computers – selling a majority stake in the company to a US microcomputer marketing organisation, Saga Systems.

Wilcox, which builds its own micros in Wrexham, Clwyd, was wholly owned by the Welsh Development Agency. California-based Saga has agreed to buy 75% of the company for about £300,000.

The Welsh Development Agency will keep a 25% interest, but that will be sold to Saga after five years at a pre-arranged price geared to Wilcox's performance.

Saga intends to use the Welsh facilities as a European manufacturing base. Saga president Ed Slominski says: "We regard this as an excellent opportunity to develop and accelerate our marketing strategy and export business in Europe and the Middle East." The company has joint ventures in Saudi Arabia, Australia and India.

Company News is compiled by Dave Madden

MICRO NEWS

Super Mac kicks off

THIS week sees the worldwide launch of Apple's Macintosh, the product that will either confirm Apple as the innovative star among micro makers, or will brand it as a single success company. Robert Parry went to California to talk to Apple about what Macintosh means to the company.

"OCCASIONALLY products come out that are breakthrough products. We feel this is one."

Steve Jobs, founder and chairman of Apple, has a high opinion of his new baby, Macintosh, and has a lot riding on its success.

"A lot of Macintosh is Apple getting back to its roots. With Mac we will bring personal computing to millions of people that current generation PCs don't reach. Its price/performance point will bring it to individuals, not just corporations. I want to make Macintosh the third milestone product."

Jobs' milestone products are the Apple II that got the whole microcomputer game going in 1977; IBM's Personal Computer that in 1982 made the game respectable for real computer companies to play; and Macintosh, this week's new arrival at the bottom end of a revamped Apple Lisa line, which in Apple's view will set a second standard for micro makers to aim at.

The story is that IBM now has the traditional 16-bit business micro market sewn up. It has already put an indelible stamp on the type of box most manufacturers are churning out for this market, and is set to dominate in sales.

"But people do not want just a single standard," says Jobs. "Apple is best placed to be the second standard. Apple will be a $10 billion company by the end of the '80s if we are successful in this."

Apple president and chief executive John Sculley takes up the tale: "With Macintosh we are saying 'Sure, the PC is only seven years old, but why shouldn't we go out and define it again – as we did with the Apple II?' We have a unique opportunity. No one is close, within a couple of years, of the price/performance capability of Macintosh."

Sculley is almost evangelical about Macintosh and its part in the scheme of things. "Macintosh's success is important for the industry, otherwise what PCs are capable of is fixed.

"We don't see anyone else in the industry trying to turn out innovative products like Apple and Macintosh."

Software to fit the machine to the customers – and Apple is aiming for the 95% of the potential PC business that so far is not reached by any supplier – will come predominantly from outside Apple. Already big names in the software industry like Bill Gates of Microsoft and Mitch Kapor of Lotus have lent their names and photos to Apple's Macintosh software advertising.

Apple's line is that software developers agree that Macintosh is where the action will be, and are feverishly porting applications.

Jobs says that Bill Gates told an Apple dealer meeting that half of Microsoft's 1984 revenue will come from Macintosh software. That either says a lot about Macintosh, or about Microsoft's future relations with IBM.

Macintosh was designed from the start to be built in millions, says Jobs. Apple spent $20 million designing the machines to build Macintosh and setting up the line in Fremont, California – overlooking the Ford and General Motor plants. Other plants will follow.

"By March we will be building a Macintosh every 27 seconds," claims Jobs.

He reckons that Macintosh sales will be supply-limited for the first six to nine months, but production should hit 4,000 a month by the end of the year.

"It will be the first product to get this high this fast," he says. The aim is to break the million barrier in three years. Apple II took six.

But despite all the noise about Macintosh and the new Lisas, do not forget the Apple II. "People will be surprised at how much we will do with Apple II in 1984," says Sculley. "It will be a major product for the rest of the decade. Keep your eye on it – we're not going to walk away from the Apple II."

JOBS with Macintosh (insert) . . . "First product to get this high this fast."

MORGAN . . . "Our products are well suited to the English market."

NCR chooses sole chip agent in UK

by Donald Kennett

NCR HAS boosted its UK chip marketing effort by appointing Maidenhead-based distributor Manhattan Skyline as its exclusive UK agent.

NCR's vice-president for semiconductor marketing, Steve Morgan, says that although the company currently sells a very small proportion of its semiconductor output overseas, he would like to see it sell 25 per cent.

"We have identified the English market as being a very important part of the semiconductor industry," he adds, "and because of the personality of the English market, our products are very well suited to it."

The company started selling chips at the end of 1981, although it has been making them for its own use since 1967. It attracted widespread attention in 1982 when it launched the first 32-bit processor chip set on the market.

But the microprocessor chips make up only 10% of its output. The biggest proportion, 40%, is from ROMs, which go to makers of small computers and home computers for operating software and games cartridges.

The fastest growing sector is non-volatile RAMs (which have a single power supply voltage and normal RAM read-write cycle times, but which hold their contents without battery back-up when the power is switched off). These, with EEPROMs, account for 25% of the company's semiconductor business.

The final 25% is semi-custom devices, which include CRT controllers and interface chips. This section is expected to get much bigger. "The people involved in it believe it will be 50% of a $40 to $50 billion world semiconductor marketplace by the end of the decade," Morgan says.

NCR's semi-custom chips use "standard cell" technology, which, it claims, has definite advantages over gate array designs.

"We've used it for 10 years and we've done hundreds of designs for our own computer division," Morgan says. "We have a very high confidence of first pass success, which has been a problem in the industry."

An important customer for NCR's semi-custom logic is the Timex-Sinclair partnership. NCR devices are used in the Timex 1500 (the US version of the Sinclair ZX81), as well as the 1000 and 2000 models and the recent Sinclair QL business micro.

Manhattan Skyline is NCR's first distributor outside North America. It was set up in 1981 by three former executives of Memec, and by the end of last year was responsible for £1 million worth of goods a month being shipped by its four principals – Oki, GTE, Standard Microsystems and Ladtek.

Call to buy

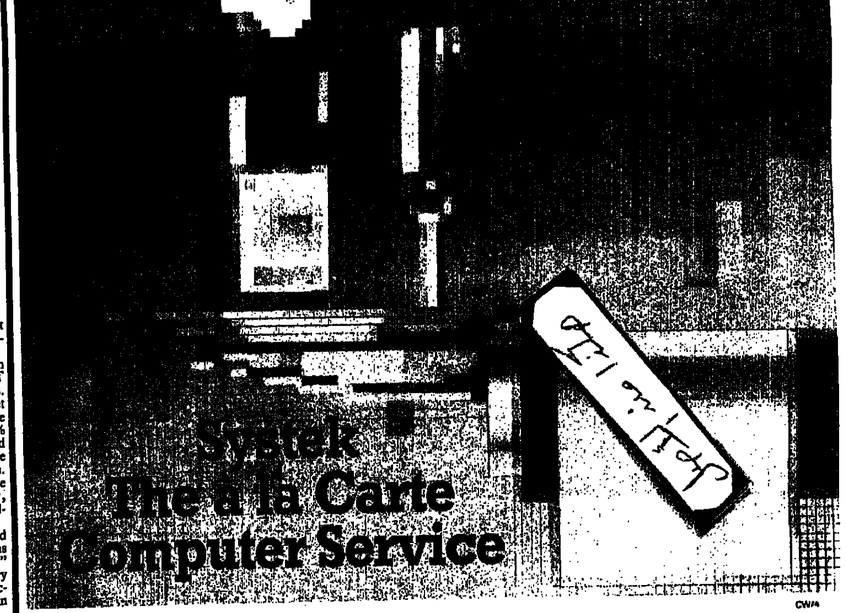
MANCHESTER broker Henry Cooke, Lumsden, is recommending commodity and future service company Rolfe & Nolan Computer Services as a strong buy. It points out that volumes in world futures markets are expanding rapidly, and looks for Rolfe & Nolan to return a profit of £500,000 against £321,000 last time.

Into the black

KAYPRO, of Solana Beach, manufacturer of transportable microcomputers, has turned a 1982 net loss of $500,000 into a net profit of $12.9 million on turnover of $75.1 million this time. The company says it shipped 53,000 Kaypro computers during the year.

Televideo $22m

TELEVIDEO Systems Inc, of Sunnyvale, California, has reported profits up 51% at $5.8 million on turnover ahead 40% at $43.6 million for its fourth quarter ended October 31. So for the year profits rose 76% to $22.4 million on turnover up 71% at $168.8 million. Chairman Philip Hwang says 1984 should be even better, when the company will benefit from sales of its new hard disc personal computer, the Tele-XT, and its TPC-II portable micro.



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SOFTWARE FILE

Wang offers aid to software houses

LOWREY . . . "Even the strongest IBM supporters can't see a clear office automation strategy there."

UK word processor and minimaker Wang is to give a helping hand to a few small applications software houses.

It is drawing up a list of recommended developers for specific markets, beginning with manufacturing. The three named in this category are Pactel, Hill Price Dawson and Peat Marwick Mitchell. Others are soon to be named for banking and insurance and these are likely to include Burford Management Services.

The idea is to formalise Wang's long-standing habit of calling in experts in vertical markets whenever a customer asks for a specialised program.

Industry marketing manager Gary Lowrey hopes that this approach may also assist in getting people to think of Wang as a data processing firm, as well as leader in word processing.

"Even the strongest IBM supporters can't see a clear office automation strategy there," says Lowrey.

In the longer-term, Wang is also on the lookout for software houses in law, transport, energy and construction.

"We don't think it would make any sense for us to establish an in-house software group to tackle these things," says Lowrey, "so we've picked on mainly those houses that we've worked with in the past, and will recommend them to our customers."

Pactel has worked with Wang on some projects for Ford; Burford set up a purchasing system for Mobil which it is now marketing.

After the recommended list is finalised in June, Lowrey wants to work on setting up deals with some larger software houses and on a "customer cross-licensing programme."

This would allow British software houses to sell programs developed for Wang abroad.

ICL leads attack on the villains

by John Kavanagh

LEADING UK computing firms and government agencies are aiming to develop a £50 device which could become a world standard solution to the problem of mini and micro software piracy.

The government's British Technology Group and 10 companies led by ICL are working with the National Physical Laboratory to develop a tamper-proof box of electronics which will decipher and run programs sold on disc or tape in encrypted form. A single box would be able to run all software following the encryption rules.

A preliminary meeting was held last autumn and at a second meeting this month six firms put up £5,000 each and letters of intent were received from several others.

The group is looking for 10 member companies to pay half the £100,000 one-year budget for development of a prototype. The British Technology Group and the National Physical Laboratory are putting up the rest.

"The members are blue-chip companies, including some big software firms," says Dr Brian Wichmann, who is co-ordinating the work from the National Physical Laboratory.

Wichmann says the group knows of no similar collaborative work anywhere. The group is keeping the US computing services industry and the European Commission in touch with its progress.

"Our aim is to help the UK industry – but it's essential that our work is accepted internationally so that exports of UK software are not impaired by the need to have the device," Wichmann says.

He points to studies which estimate that between £30 million and £50 million a year is being lost through software piracy in the UK alone.

The £5,000 membership fee has kept out smaller software firms – but the results will be publicly available so large numbers of suppliers can use the new solution.

The group is now completing a study of existing software protection methods to ensure there are no other suitable devices or techniques already available.

Dr David Everett, managing director of Open Computer Security, which will build the prototype, says all other methods are "a joke".

"We must press ahead as quickly as possible, otherwise a *de facto* standard such as a silly dongle could appear because people are so desperate for some form of protection," he says.

A dongle is a hardware device provided with the software. The program only runs if it is there. But pirates can delete the checking routine or add one which simulates the dongle.

Other systems use encrypted program code – but run the deciphered version in the computer's memory, where it can be copied.

TERRY and CAROL POOLE . . . Moving to Salisbury.

Coal money warms Tabs into management shake-up

MICRO accounting software house Tabs has been given a cash injection of over £500,000 from the National Coal Board pension fund and bankers Hambros.

The equity finance has enabled the firm to shake up its management team and bring its staff from offices at Andover and Ringwood under a single roof in Salisbury.

Two directors, Rab Kilpatrick and Chris Rogers, have left and been replaced by four new ones. The recruits are former Mattel managing director Mike Lunch, former Tabs dealer Richard Rance, former Honeywell man David Hayward and Nick Griffin from accountants Peat, Marwick, Mitchell.

Tabs managing director Terry Poole says he is also looking for eight more high-calibre programmers to add to his existing staff of 50.

Kilpatrick left to return to Quest Automation, while Chris Rogers has gone to the US to represent Tabs' interests.

The investment is intended to back development of its multi-user product range Supertabs and expansion of its franchise chain of business centres.

Tabs broke new ground for the industry by being first to sell its goods via colour supplements and was among the first to use phone selling. In 1982, Hambros took a 15% stake in Tabs for £150,000.

Poole says that the decision to move to Salisbury is based largely on the cheapness of premises there. It would cost them about £50,000 a year less than going to Newbury, he says.

SOFTWARE FILE

Anti-piracy costs threaten products

MANY good software products are not reaching the market because of the high cost of protecting them against piracy, according to an industry pundit speaking at a British Computer Society meeting last week.

Jon Baldachin, former consultant to the BBC Computer Programme, is head of software house Little Genius and has spent the last four years devising an answer to the threat of bit-copiers.

Baldachin said that hardware solutions such as the dongle were only useful for products sold at over £50 each. For cheaper programs, they added prohibitively to the cost of production.

As software prices kept falling, more and more attention was being given to techniques like non-standard disc formats. But good bit-copiers like Locksmith had successfully overcome many of the problems of such clever formatting.

Because of the cost of dongles, firms like Visicalc had decided to go into non-standard disc formatting in 1980. Since then, there had been a continuous war between program developers and pirates over track/sector recognition. Locksmith, he said, was powerful, and sophisticated at recognising these patterns, and there was no legal recourse against the people who sold it.

But he said there were limits to the mechanical intelligence that could be built into a bit-copier. "So far we think we're ahead of the game," he said.

The piracy problem is more severe in the US because the UK had more mature distribution channels. Big distributors like Boots or Debenhams would drop a product as soon as there was any hint of litigation.

But the US is about a year behind us in this respect and still depends heavily on mail order, which is vulnerable to pirates, he said.

Micro links delayed

BIG software firms are having trouble living up to their promise of getting mainframes talking to micros.

Cullinet, which promised delivery of its IDMS/R in the fourth quarter of last year, is now talking of installing it here in test versions by the end of January and putting it on general sale by the end of June.

Informatics and Visicorp, which are combining to provide two new products called Answer/DB and VisiAnser, are also behind schedule. They also promised their solution for the fourth quarter, but now say it is due for release this week. They say it has already been made available in the US, though there are no buyers as yet.

McCormack and Dodge claims it is still on target to release its millenium product in the spring.

Now there is a new challenger in the market, Martin Marietta, owner of Hoskyns and Mathematica. Its IT software has been put together by Martin Marietta Data Systems in New Jersey from research which was being undertaken by Mathematica before the $30 million takeover last summer.

Marietta vice-president Norm Agin in London recently said they already had several US users including San Diego Gas and Electric.

The system is to be extended over the next few months with connections between Mathematica's Ramis-11 database and the IBM-PC.

Principal distributor to the corporations will be Hoskyns, but Marietta is looking for other channels to reach the smaller organisations.

Agin claimed there was no threat from IBM following that company's announcement that it was to develop Comshare's Wizard decision support system.

AGIN . . . "No threat from IBM."

Software File is compiled by George Black

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CALLAWAY . . . Attracting the right recruits will be the key factor.

GEC plans for tools subsidiary

GEC's new software tools subsidiary will be oriented towards developing Ada tools on the DEC Vax-11/780 and Unix tools on the new GEC Series 63 hardware.

Both elements could be underpinned by public money, through the Alvey Programme or other government initiatives. The company, based in London's Covent Garden, is the brainchild of GEC directors Laurence Clarke – now seconded to the Alvey directorate – and Derek Roberts, who will be its chairman.

The aim is to recruit around 50 top-level staff by April 1985 and to sell the tools both to other GEC wings and on the open international market.

Roberts will report through GEC director Jack Puteman to group chairman Lord Weinstock. But he will be anxious to convince programmers that his is really a small, autonomous outfit, not just a part of a huge conglomerate.

Technical director Tony Callaway says that being able to attract the right recruits will be the key factor in whether they succeed or not.

The number of skilled Ada practitioners in the UK runs to only a few hundred and for Unix the figure is still only a few thousands. Callaway says he will not be trying to poach any of the existing 3,000 software engineers at GEC. They will need their bosses' agreement to move to GEC Software.

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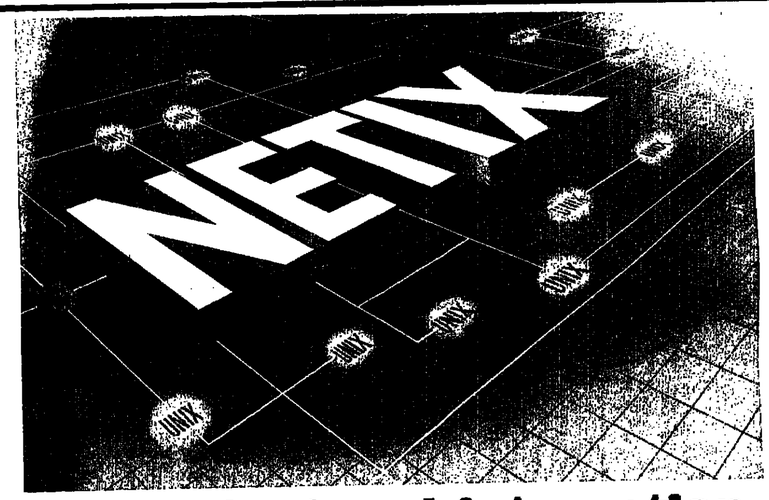

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PROFILE

$50 start has earned Hwang a fortune

SUCCESS was slow coming to Philip Hwang, 47-year-old founder and chairman of Televideo Systems. But it came big. In 1964 when he arrived in the US from South Korea, he had $50 in his wallet. Eleven years later he had amassed the modest personal fortune of $9,000, which he used to set up Televideo in partnership with two other engineers.

The venture splattered along unceremoniously for a couple of years, and the two other co-founders pulled out, fed-up with being forever broke left. Hwang struck on, and look where it has got him.

At the latest count he is worth $628 million, and is listed as one of the 400 richest men in the US. Yet for his first 13 years in the US, plus his 10 years in South Korea as a North Korean expatriate, he was a financial also-ran.

Hwang's first move on arrival in the US was to enrol for a mathematics degree at Wayne State University in Detroit. Then on to Harvard Business School in the hope of learning how to make money.

With no rich parents to keep his pockets full, he had to work as a waiter in restaurants at night to pay his course fees and buy his daily bread.

After this, he worked at Burroughs and NCR as a hardware engineer, and managed to put aside $9,000 to meet his dream of starting his own company, which in 1975 he did.

But for several years, Televideo looked like being just another small time electronics company. So how did he make it?

Hwang makes it sound as simple as sucking eggs, and a great deal more rewarding. In 1979, Televideo started selling display terminals more cheaply than most other companies, just when demand for them was rocketing. Hwang went home to Korea to negotiate cheap

by Philip Hunter

manufacturing deals, which enabled him to undercut much of the opposition.

But he is quite unsentimental about his country, and has now removed much of the manufacturing to Sunnyvale, California, keeping the Koreans on only for labour intensive parts of the assembly.

"All high technology engineering and quality control is now in Sunnyville," Kwang assures us. And the company is also planning to manufacture in Puerto Rico.

The man emanates a disarming patience, giving the expression that what cannot be done today, can quite happily be left until the day after tomorrow.

This attitude certainly helped to see him through the hard years of 1975 and 1976, when he says he never had a single pay cheque and lived off his wife's salary.

Hwang also attributes his success in part to a severe reluctance to borrow money, so he is a glowing exponent of the spirit of Reagonomics, if not to the practice.

It was not until 1982, that he borrowed any money at all for his business, and then only a $5 million debenture loan, just loose change in comparison with his company's turnover, which was now colossal.

Hwang says he is also reluctant to part with what he has got, in this case a 70% shareholding in Televideo. For several years, he owned almost all of the company, but has now shared 10% among his 1,000 employees, and in March last year went public to raise $125 million.

More money was raised in November last year in a rights issue, but Hwang still has his 70%.

Televideo's move from video games into TV monitors in 1978 launched the explosive growth, but it has been personal computers that have sustained it over the last two years.

The company's computer division, started in 1981, now accounts for over half the overall turnover.

Now, just 30 years after Hwang escaped from North to South Korea during the Korean war, he has come to the UK to initiate what he considers a vital step in making his company a major force in Europe.

This is to appoint Thorn EMI as the exclusive UK and Eire dealer.

"Until now we have never given anyone exclusive territory like this," Hwang says. Hwang believes in local competition between distributors, but not being one to let his prejudices overcome his business nose, he decided to drop the three existing UK distributors, Midlectron, Encotel and Colt Computers, from the computer side of Televideo's operation. They will be retained, however, for terminal distribution.

Hwang says that he wanted to have a name bigger in the UK than Televideo itself behind the product, and that Thorn EMI was an ideal choice since it also had plenty to offer on software. But another reason is almost certainly Televideo's poor market penetration in the UK, compared with the great inroads it has made into Amerian personal computing market.

Not that everyone attributes this poor performance in the UK market to the three former distributors. BCU Computers, formerly a dealer selling Televideo's TS range of desk top micros for Midlectron, blames Televideo itself.

"The main problem is that its operating system is not up-to-date," says a spokesman.

Now, however, Televideo has a new desk top model due for release in the UK next month, the TS1605. This offers full IBM-PC-DOS compatibility at £2,600 a system.

Hwang places great store on this new computer's PC-DOS compatibility, and admits that previous models which only ran the more general MS-DOS programs were not truly IBM-compatible. "The 1605 is almost 100% IBM-compatible," he claims.

Hwang's vision of Televideo as the complete systems company should be fulfilled during 1984, he thinks. The company now has an extensive range of business applications software, and also makes printers as well as terminals and displays.

Turnover for 19847 At least $350 million, Hwang asserts.

HWANG . . . From Korean rags to riches.

PLATFORM

IBM's blessing is not final say

David Addison is president of Massor Systems International.

A FASCINATING thing about this industry is that if IBM doesn't bless a particular technology, it doesn't merit serious attention.

The big blue seal of approval has more to do with its own marketing needs than the frontiers of research. Yet the most sophisticated of users shy away from viable developments unless IBM advises them that this is the direction they ought to take.

Take the long-term need to solve the problem of online storage demand. This is estimated to be growing at an annual rate of up to 70%. If things keep up as they are – just imagine the implications of millions of corporate personal computers linked to mainframes – most major users face data management problems on a massive scale.

The IBM solution so far is more and more disc drives. And why not, when you are selling 3380s at the rate of $1 billion a year in Europe, and your growth rate projections could be as high as 40-50% per annum?

Why look to new frontiers when you have a lot of products to sell and the market appears to have very little limit?

This inclines me to believe that any announcement on double density disc drives will be later rather than sooner. Some industry pundits have talked about the possibility of news of this development in the first quarter of 84. The smart money is on the fourth quarter of this year after IBM has had an opportunity to unload some highly profitable inventory.

The plain truth is that disc drives alone cannot meet the explosive storage demands that the industry faces without straining the budgets, floorspace requirements and cable connections of most users. At some point, alternative solutions will have to be considered, simply to control a situation that could get out of hand.

I am not going to use this Platform to make a detailed case for alternative mass data storage and management systems. They have a role to play once users begin to evaluate how they are going to cope with real storage needs in the next two or three years.

I don't believe data processing managers are going to make their senior managements very happy by forecasting the need to double the size of their information centres to house all those new disc drives.

Somehow, they are going to have to come to terms with economic data management, where realistic priorities are set on how to store and access data. If, for example, a mass storage device is available and can store a massive amount of information within a small space, surely data processing professionals don't need IBM's guidance as to its viability.

At the end of the day, what this industry has to learn is that the market, and not IBM, will be the final arbiter of new technology.

David Addison

DOWNTIME

An education at Rita

AMONG the glittering elite at this year's Rita Awards dinner at the Grand Hotel in Birmingham was a man who had twice been in jail, and who admitted to be the perpetrator of a longing running fraud involving the Inland Revenue.

Libel laws, of course, prevent me from naming the individual, but I can reveal that he was at one of the three top tables at the Rita dinner, and only one table away from Alvey supremo Brian Oakley.

The man in question works at one of our leading universities. He admitted to me over our post prandial drinks that even as a youth he had a hankering for crime: he always carried a thief's housebreaking tool kit with him, not to use, but to tempt the police to pick him up. "They did once, and then got bored with me."

His fraud against the taxman is more subtle. Every now and again he sends a random cheque to the tax office for a small amount, say £10.23, or £6.40. The strategy so confuses the tax people, and their computer, that he has avoided paying a tax bill for many years.

"Most people in data processing are dishonest by nature," he confessed.

Reversing your chips

THERE is a nice distinction between official second sources of semiconductor products, which are given the specifications to copy quite legally and openly, and unofficial second sources, which develop the product by making use of the process known by the euphemism "reverse engineering".

Intel has accused Nippon Electric Company of Japan of reverse engineering its 8086 16-bit processor family for many moons now, and has at last reached a settlement.

What's in a name?

WHAT's in a name? We were impressed by the apparent coincidence that one Peter Irvine is a director of the Irvine Development Corporation. Perhaps there are Telfords and Washingtons, Kilbrides and Cwmbrans, even Welshes in the Development Agency. Can we presume there's a Livingston?

Chad

From Seattle, high-techless

THERE I was, hanging around Seattle airport homeward-bound from the Californian sun, when a customs man took me aside. I was ready for the usual litany of money and drugs as he rifled through my baggage, but not for searching questions as to whether I had any high technology about my person.

"Hardware, software, chips, documentation – that sort of thing," he said.

The galling thing was that I didn't have anything worthwhile. The highest tech I had was my dying digital watch, and he didn't seem interested in that.

I know the Americans are ever-so-anxious to keep their high technology to themselves, but I can't help feeling that random checks on airline passengers flying east from the US is taking it all too far.

On the slippery slope

DO bleeps – you know, those damn gadgets that call doctors from the pub to the operating theatre – tend to freeze up?

I only ask, because the other day a pal of mine wanted a word with Lord Orr-Ewing, who, it being January, was of course on the ski slopes of Switzerland.

Should have been no bother, he thought, to get him dragged to a phone for a chat – what with him being a director of one of the Air Call companies. Not a bit of it. My friend had to wait till it got dark and His Lordship came in.

Maybe he switched it off to keep the media at bay.

10 YEARS AGO

FROM COMPUTER WEEKLY OF JANUARY 24, 1974: Scicon resigned from the Software Houses Association, leaving the organisation with problems . . . GEC won a £14,000 order from the British Aircraft Corporation for its 2050 remote job-entry terminal.

PUZZLER

1,234: this number is written in a higher base than the conventional 10. In fact, it represents the decimal number 7,642. What base has been used? See page 79 for solution.

Liveware File *by Don*

ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, January 26, 1984

This co-operation may set standards

THE threat from US and Japanese competition in information technology has been brought home increasingly as major European companies have started to form ties with US and Japanese firms in preference to each other.

Protectionism is being discredited increasingly in general markets. Even in telecommunications, one of its last bastions, it is coming under fire.

Open markets, it is said, benefit users by bringing them the widest possible choice of products (so long as the country can afford the imports), and manufacturers by bringing them the stimulus of competition (so long as it doesn't put them out of business).

The problem is to balance the benefits and the dangers from such a shift in policy. Manufacturers must enlarge their markets as users widen their choices. Companies must be prepared for future opportunities, but not killed off by removing their current ones. Markets must be opened multilaterally, partners must prove to be fair-minded and trustworthy. Opportunities must be made real and not just apparent.

Part of the solution must come from manufacturers. This month has seen them told by a US consultancy, the Yankee Group, in an internal report to the European Commission, that their long-term planning and their marketing efforts are inadequate.

Part of the solution must come from government. This month has seen the US accused of trying to control exports of high technology, and the UK government challenged to do something about it.

Some solutions must evolve in a wider arena. This month has seen a new challenge to the government's Telecommunications Bill arise from the opposite side of the fence from the previous one: fear of too little competition is voiced to match the previous fear of too much.

Perhaps the most positive step is the one taken by CEPT on European standards. Standards seem to be a fairly safe area for co-operation. It was not always so. Standards have seen some fierce rivalries. But there are less likely to be such rivalries now, and this is one area in which the participants will feel little need to police each other.

With any luck, as well as bringing benefits directly, this co-operation on standards will set the tone for further co-operative efforts.

Save manufacturing

THERE is a hint that there is some debate within the Department of Trade and Industry over whether service industries – and one is particularly thinking of those related to the new technologies – will really be the salvation of the UK economy.

Information Technology Minister Kenneth Baker, speaking at the London Business School last week, repeated the government's view that most new jobs over the next 25 years would be created in service industries.

There seems to be some disagreement with a speech made earlier this month by industry under-secretary John Butcher, who said that information technology would not change working patterns, would not herald in the age of leisure, and that it was "foolish and misguided" to say so.

To be fair, the "disagreement" between Butcher and Baker may be more imagined than real. And also to be fair, Baker did say in his remarks that he could not envisage the UK economy without a large element of manufacturing employment.

The point is, it is all to easy to let the words "information technology" and "services industry" slide off one's lips with the promise that a new day is coming. Services industries will create new jobs, but only if there is a stable manufacturing industry as a base.

If there is no real disagreement between Butcher and Baker, perhaps there should be. Perhaps it is time for a much wider debate in the DoTI, and government as a whole.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by J. Carr, of Reading, Berks, who wins £5.
On the last few lists, the weather in these two Californian cities (Los Angeles and San Francisco) has been given as "sunny".
At 4 am local time?
A rueful met officer admitted: "These observations are compiled by computer and it can't differentiate between night and day. And our programmers can't do anything about it."
Financial Times

LETTERS

Ludicrous laws victimise technology companies

BRIAN ASH of Arrow Computer Systems ("Arrow boss urges faster cashflow," *Computer Weekly*, January 5) raises some interesting points which affect the whole small business scene here.

His comments about small company failures due to under-capitalisation are right on the ball. But small high technology companies are generally under-capitalised for two reasons.

On the one hand, the founders have very little idea of how to go about developing a company or raising the money – or even how much money they are going to need. On the other hand the investment community, with one or two honourable exceptions, is not geared to funding small fast-growing businesses and knows nothing of the technology involved.

Even where they use technical advisers they usually come from the "big is beautiful" brigade. How can an ex-IBM mainframe salesman really be expected to give a view on the needs of a microsoftware house?

We have terrible trouble persuading people who come to us for help in finding finance that they need to raise more money than they ever dreamed was necessary and that they will need more every couple of years. It is much harder to make them understand that investors actually want a sensible amount of equity for putting the money in.

Ash raises another important point on credit control. Most small firms have neither the knowledge nor the time to really control their debtors, but the laxness of our laws on debt make everyone's job the harder. It is so easy to be a crook that the wonder is more are not! This is why factoring and debt insurance is so expensive unless you have a blue chip customer list.

Because of our ludicrous company laws people can string out a debt until it is worthless, issuing cheques that will never be honoured, getting the courts to allow extended payment, taking everyone for a ride.

The smaller company falls main victim because it has not the resources to chase a bad debt to the limit. If the law were tight and the penalty severe then the credit control industry would find it economic to service small companies.

Sadly, as Ash so rightly says, this government sees a small company as one which all our western competitors class as medium-sized. Truly small business does not get a look in.

Perhaps too much of the party funds come from those rather larger companies that do enjoy the benefits aimed at small business.

PETER K. MINTON
Financial Counsellors
London W1.

Tebbit look-alike

OUR club members would like to know whether the picture of Norman Tebbit on the front of *Computer Weekly* (January 5), is the real thing or is it, as we suspect, a Taiwan look-alike?

JOHN DALE
Secretary
Newtown & District Computer Club
Newtown
Powys.

It was the real Norman Tebbit – Editor.

Market leadership claim for MICA

IAN TRAIL, (*Computer Weekly*, January 5) takes us to task for our claim that MICA – Microdata's Major Incident Computer Application – is two years ahead of any comparable product.

MICA is a lot more than just a word or text retrieval system. It is a fully featured specialist package developed with the active involvement of serving officers in the West Yorkshire Metropolitan Police Force whose experience of major crime investigation is second to none. It has received the approbation of the Association of Chief Police Officers, and meets all Home Office standards so far published.

Technically our features include compatibility with manual incident room standardised administrative procedures as well as with Autoindex, plus an option of communications links to various other manufacturers products.

Anyone who wishes to challenge our market leadership must show an equivalent level of acceptance as well as match us feature for feature. That's what we would call a "comparable product" and that's why I think our estimate is a perfectly reasonable one.

BEN GARNER
Communications Manager
Microdata Information Systems
Hemel Hempstead
Herts.

The software behind our software

As the pace of development in computer technology quickens, it's all too easy to be blinded by glib claims and slick talk when looking for an effective, efficient computerised human resource management system.

So it may be reassuring to hear that Peterborough Software's Unipersonnel, Unipay and Unipension packages rely very strongly on the most sophisticated, flexible and productive software available.

This unique feature? People.

At Peterborough Software we don't just put our faith in technical expertise, innovation and considerable experience in producing management software.

Rather, to ensure that our customers get just what they need, we back all of that with the right people.

Take the first of the people you're likely to meet from Peterborough Software, a member of the sales team. Rather than setting out to sell you something, come what may, you'll find that our sales people will be more interested in discovering your problems, and ascertaining whether our software packages will in fact do the job for you.

Generally, we find that Unipersonnel, Unipay and Unipension more than meet most human resource management needs. Because our policy of continuous, innovative development of management software for IBM mainframe users ensures that our products keep us – and our customers – one step ahead.

Development. Innovative, management orientated new product policy.

Which of course relies again on people – our team of systems analysts, programmers and engineers.

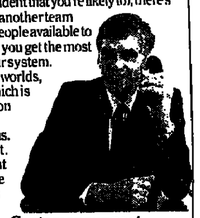
If you find yourself taking a serious interest in our range of software (which we're confident you will), we'll invite you to a Product Workshop.

Where you'll get the chance to roll your sleeves up, and find out for yourself just what you'll get from Unipersonnel, Unipay and Unipension.

And have your questions answered and problems resolved by friendly, helpful specialists.

Another group of Peterborough Software people you'll find invaluable is our Education Department. Their function is to ensure that you, your staff and your user department colleagues know what you need at the appropriate levels to make best use of Unipersonnel, Unipay and Unipension.

Once you've installed any one of our products (and again, we're confident that you're likely to), there's yet another team of people available to help you get the most out of your system.



Sales. We won't sell you products you don't need.

Education. We'll teach you how to get the most from our products.

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Even in the best of all possible worlds, sometimes things will go wrong. Which is why our Customer Support Team is on call to you.

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PEOPLE

■ Rair has appointed **Mike Langley** (above) as finance director. He will be responsible for the financial management of the UK company, as well as Rair's subsidiaries in France and Germany, and the USA. Langley was formerly European controller of the Boston-based Reece corporation, where he was responsible for finance and administration for the Corporation's European subsidiaries.

■ The board of NMW Computers announces that **Nigel F. Banister**, marketing director since 1976, is now managing director following the retirement from active business of **Brian D. Johnson**, who has been managing director of NMW Computers since the company was founded in 1972.

■ **Bill Evans** is now heading operations for CPI, part of the Jenrick group of staff recruitment companies, dealing with national and international organisations. Evans previously spent over seven years in recruitment of high-level computer personnel with another leading consultancy.

■ As part of its drive to increase penetration of UK information systems markets, Ericsson Information Systems has formed a market communications unit. Head of the new unit is **Sheela Rao** (below), who recently joined the company as marketing communications manager. Rao assumes total responsibility for the co-ordination, planning and management of all promotional activities, including advertising, press and public relations and internal communications.

■ **Ray Gent** (above) has been appointed director, manufacturing operations, of Beckman Instruments. He was previously plant manager at Beckman's Glenrothes manufacturing operation.

■ **Chris Pullen** has been appointed marketing executive by ABS Computers. Prior to joining ABS, he spent two years as a management trainee with Trafalgar House, ABS parent company.

■ Geac Computers Europe announces the appointment of **Paul Field** as international banking product group manager. He was sales manager at Tymshare, with responsibility for the international banking system.

■ Digital Research is strengthening its technical support by the appointment of **Tony Harris** as technical support consultant. He was previously with Hytec, which he joined as software support manager and was promoted to technical manager, and before that was working on development at Telecomputing. Also appointed is **Anthony Hay**, as programmer.

■ **Geoffrey Salkeld** (above), former vice-president and general manager of Computer Automation inc, of Irvine, California, has been appointed president of Dylon, the designer and manufacturer of magnetic tape systems and controllers. Salkeld has also joined the board of directors of Dibble Microcircuits, a newly-formed holding company, which will co-ordinate the activities of Dylon and Dibble Electronics, a firm specialising in printed circuit board manufacture.

Rank Xerox (UK) has signed a contract with the British Amateur Athletic Board (BAAB) for Steve Cram (right), BBC Television's Sports Personality of the Year for 1983, to carry out a series of charitable and social activities for the company.

During 1984 and the early part of 1985, Cram will make a number of personal appearances at a variety of functions, including several Rank Xerox sponsored 10 Series 10 kilometre road races and other major Rank Xerox athletics meetings.

In addition, he will visit schools for handicapped children and be involved in coaching at regional seminars for up and coming young athletes.

Rank Xerox has devised the programme with the full co-operation of the BAAB to ensure Cram's schedule is not interrupted as he builds up to the Olympic Games in Los Angeles.

David Harris (left), marketing director of Rank Xerox (UK), says: "We are delighted to have been able to secure the services of Steve Cram to help us in our support for British athletics, begun last year with the introduction of the Rank Xerox 10 Series races.

"Cram's presence will be part of the overall athletics package involving Rank Xerox in a further series of events planned for 1984 and 1985."

■ Bytec Gulfstream has made three appointments to the team responsible for marketing the Hyperion 16-bit IBM-PC compatible portable business computer throughout Europe. **Trevor Duplock** becomes European marketing manager; **David Greig**, European technical manager and **John Woolmore**, European financial controller. Duplock was most recently general manager of Abacus Electronics; Greig was previously technical director of an Amsterdam-based company that designed, produced and marketed peripherals and disc-based microsystems throughout Europe; and Woolmore has spent over 10 years in senior financial positions with companies in the computer and electronics industries, including Comma and Abacus.

■ The Peachtree support team has been expanded with the appointment of Peter Kroeger as support consultant with responsibility for the product management of PBMS, the Peachtree Business Management System. He was previously a partner with R. Kerr & Co, chartered accountants and auditors.

DIARY

JANUARY 30
Scottish Micro Group film night, University of Strathclyde. Details: BCS, 01-637 0471.

JANUARY 30-31
Implementing Strategies for Factory of the Future, Paris, sponsored by Technology Transfer Society, £300-345. Details: 01-242 4045.

JANUARY 30-FEBRUARY 3
Structured System Design, a BIS Applied Systems residential workshop, Bedford Hotel, Brighton, £630 plus VAT. Details: 01-261 9237.

JANUARY 30-FEBRUARY 10
JCL and Utilities for Programmers, Compower Training School course, Cannock, Staffs, £530. Details: Cannock 2511.

JANUARY 31
Film and social evening with buffet, Exeter University. Details: BCS, 01-637 0471.

FEBRUARY 1
Panel meeting of Institution of Electrical and Electronics Incorporated Engineers, on Hazards/Dangers of Software being used as Control Elements, London WC2.

FEBRUARY 1-2
Database Systems for Microcomputers, course, Edinburgh, £339.25. Details: (031) 225 5673.

FEBRUARY 2
Private Viewdata: Achieving Business Benefits Today, BIS Applied Systems conference, Lord's Banqueting Centre, London NW8, £140. Details: 01-261 9237.

FEBRUARY 2-3
Implementation Strategies for Factory of the Future, conference sponsored by Technology Transfer Society, Royal Aeronautical Society Lecture Theatre, London, £300-345. Details: 01-242 4045.

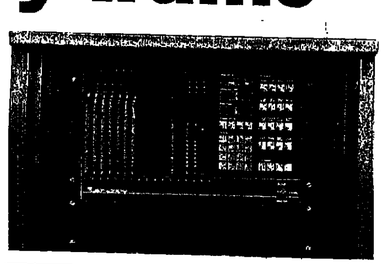
Cost-effective Software Design, seminar, Oslo, £300-345. Details: 01-242 4045.

FEBRUARY 5-7
VS APL Fundamentals, Cocking & Drury course, London W1, £300. Also February 21-23. Details: 01-493 6172.

FEBRUARY 5-9
Education Arabia and the Middle East Business Equipment, Communications and Computer Show, Bahrain, run by Overseas Exhibition Services. Details: 01-

Merlin
British Telecom Business Systems

The Heavy-Traffic Controller



Conventional networking systems can be complex and frequently inefficient in their utilisation of both hardware and telephone lines. Sometimes errors creep into your system, and occasionally a communications link fails. But with the advent of British Telecom's Merlin Datelmux 5500, those problems become a thing of the past. The 5500 is the heavyweight among statistical multiplexers. We can even optimise your network configuration for you.

From 4 to 240 Channels
The 5500 can service up to 240 channels, either from point-to-point links or from up to 15 composite links to other Datelmux sites. Up to three 64k/bits links, in addition to a single kilostream link Datelmux for up to 56 channels. Not only this, you get integral error protection for your data and comprehensive network management.

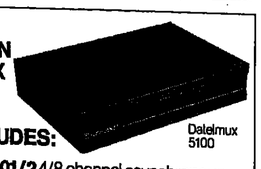
Central site control
However many terminals you have, the 5500 will route each one into its relevant computer port.

Port contention
If you have more terminals than you have computer ports, the 5500's Port Contention option will form them into an orderly queue with a clear indication of the order of preference.

Nodal capability
The alternate routing facility finds a way to get your data through. If the link between one Datelmux and another goes down, data will be re-routed automatically via a third one. You get maximum networking flexibility with economic onward linking and a consequent saving on line costs.

Local data switching
You can use Datelmux 5500 as a local area network, switching terminals and computer ports within a building, and still have gateways to the outside world.

THE MERLIN DATELMUX 5000 SERIES ALSO INCLUDES:



Datelmux 5100

Datelmux 5101/2 4/8 channel asynchronous.
Datelmux 5111/2 4/8 channel asynchronous interworking with Datelmux 5300/5500 networking products.
Datelmux 5121 4 channel synchronous time division multiplexer.
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Microdata 1000

Brings Reality to the desk top workstation

The new M1000 workstation from Microdata has a unique feature which makes it stand above the competition: the Reality operating system.

World market leader in implementing Pick-based operating systems on the established Reality and Sequoia (Series 9000) mini-computer ranges, Microdata now puts the same ease of use onto the desk top. Total compatibility from range to range enables applications to be developed and run on an M1000 workstation, on linked M1000 workstations, on a Reality system or on the largest of multi-site Sequoia networks.

Find out today the many positive benefits which a Microdata M1000 puts at the end-user's fingertips. Call Hemel Hempstead (0442) 61266 now and ask for the One Thousand Hot Line.

And then don't settle for less.

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Users want better support

Gripes and good points are highlighted by the 1983 user satisfacton survey. John Riley looks at the results

LAST year's laggards about responding to the national *Computer Weekly*/Datapro user satisfaction survey have pulled their socks up this year and mainframe and minicomputer users remain generally satisfied with their machines. Despite that, the general level of technical support supplied by manufacturers is still weak.

Those are among the broad findings of the 1983 survey, the largest ever, which is based on 2,064 user responses representing a total of 3,390 systems. There were 819 mainframe and 1,245 minicomputer user responses – more than double last year's response (Figure 1).

In the mainframe section this year, the IBM plug compatible manufacturers, Amdahl and National Advanced Systems (NAS), get the best ratings by their users for all-round performance. However, the sample for these companies is low, so perhaps more impressive is IBM's high rating based on a sample of nearly 400.

Sperry and NCR, which came bottom last year in the mainframe user ratings, get a sharply increased vote of confidence from their users this year, judging by the numbers of users prepared to recommend their systems and the satisfaction index (Figure 4).

There is a sharp drop in the number of Digital Equipment users who would recommend their systems, but that may be the result of the low sample, and of DEC's decision last May to drop DEC-System 10 and 20 development.

Top runners in the minicomputer section are Hewlett-Packard, DEC and Perkin-Elmer, in that order, with a 3.2 satisfaction rating and best recommendations from their users. The 216 IBM minicomputer users who responded put the company fourth.

NCR gets the wooden spoon in the minicomputer section, with a four-point drop in user satisfaction to 2.5 from 2.9 last year. Data General and Datapoint are all down on last year's ratings and ICL has lost some ground.

Name of manufacturer	User-responses (minimum of 10)	
MAINFRAMES	1983	(1982)
Amdahl	17	(7)
Burroughs	35	(9)
CTL	14	(5)
Digital Equipment	12	(5)
Honeywell	50	(27)
IBM	396	(130)
ICL	196	(83)
NCR	20	(14)
NAS	10	(–)
Sperry	61	(21)
Others	8	(25)
Total	---	---
Sample Sizes	819	(321)
MINICOMPUTERS AND SMALL BUSINESS SYSTEMS	1983	(1982)
Burroughs	59	(37)
Data General	39	(32)
Datapoint	18	(12)
DEC	271	(101)
GEC	29	(4)
Hewlett-Packard	90	(33)
Honeywell	56	(28)
IBM	216	(104)
ICL	189	(98)
Microdata	32	(–)
NCR	25	(14)
Perkin-Elmer	17	(4)
Prime	56	(18)
Systime	43	(18)
Texas Instruments	15	(11)
Wang	14	(7)
Others	76	(90)
Total	---	---
Sample Sizes	1245	(633)

Fig. 1. Number of participants in the survey.

COMPUTER WEEKLY sent 10,000 questionnaires to a random sample of subscribers last September to gather information for the 1983 *Computer Weekly*/Datapro user satisfaction survey – the largest so far.

The aim of our survey, now in its fourth year, was to gather pertinent information about each system and its operation, such as type of industry, principal applications, source of applications programs, primary programming language used and future acquisition plans.

The real core of the survey, however, is the section where users are asked to indicate the advantages and disadvantages of their systems; to rate various aspects of their systems, their software and support; to evaluate how much, if at all, the systems lived up to expectations; and to make recommendations to other users.

Responses may have been coloured by individual variations in expectations, different applications, the operations environment, and the quality of service and support provided by the vendor's branch office.

Moreover, a range of systems is represented, both old and new, and performance of older machines can pull down overall satisfaction ratings with a manufacturer.

A total of 2,270 of the 10,000 questionnaires were returned, initially screened and forwarded to Datapro for further processing. A total of 2,064 were accepted. These represented a total of 3,390 systems, because many of the respondents have multiple systems. In cases of multiple systems, each model was rated on a separate copy of the questionnaire.

The results are given either in straight percentages of users' responses to certain questions, or by reference to a satisfaction index.

The satisfaction index was calculated by asking users to grade aspects of their systems into one of four categories, which were then weighted. "Excellent" was weighted as four; "good" as three; "fair" as two; and "poor" as one. From this, an average mark (between 1.0 and 4.0) was obtained.

The questions are the same as those asked in previous years. This provides a sound base for comparison with opinions in earlier surveys.

The overall response was more than double that of last year's survey, which had 954 user responses, representing 1,273 systems. The most comprehensively covered manufacturers were IBM and ICL in both the mainframe and minicomputer sections, and Digital Equipment in the minicomputer section.

Responses from users of other manufacturers' equipment were thinner on the ground, and figures are only presented here when there is a sample of over 10 mainframe user responses and over about 20 minicomputer user responses.

The full survey report, to be published by Datapro at the end of January, provides a considerably more detailed breakdown of the results.

In the survey, all users were asked to draw attention to significant advantages and disadvantages of their systems. The top three benefits in the whole survey are, firstly, ease of expanding or reconfiguring the system; secondly, response time; and thirdly, compatibility of programs and data carried over from other systems.

The major problems for users continue to be, firstly, that vendors failed to provide all the promised software and support; secondly, that the computer proposed by the vendor turned out to be too small; and thirdly, that required software was delivered late.

Overall, users are happy with their CPUs. The reliability of mainframes is one point up this year from 3.2 to 3.3, and that of minicomputers is 3.4. There is an average score of 3.0 out of the maximum 4.0 for peripherals reliability, quality of maintenance service, standard of manufacturers' software and overall satisfaction.

However, this year's survey reveals that, in general, manufacturers have not done much about improving the standard of technical support they are giving their users. Three aspects of technical support – troubleshooting for users, user education and documentation – are rated only 2.4 by mainframe users and 2.5 by minicomputer users.

The main grouse, apart from the relatively low standard of technical support, is the standard of manufacturers' applications software, which slips to 2.5 and 2.4 for mainframe and minicomputer users respectively. The dissatisfaction that appears in the survey may reflect the increasing efforts of manufacturers to obtain applications software via third parties.

Looking more closely at the mainframe figures, users are clearly getting happier with their systems (Figure 4). Since 1981, the number of respondents who would recommend their systems to others has grown from 71.7% to 75.2%, while over the same period those who would not recommend has dropped from 17.6% to 9.7%.

Loyalty by users to mainframe vendors is high. ICL mainframe users are the most loyal: while 25.7% intend to change their systems this year, only 1.3% expect to go to a different vendor.

IBM users are the next loyal, for while 36% have plans to replace their systems, only 1.8% intend to leave IBM.

The response to the survey by IBM mainframe users was treble that of last year, with 396 user responses. IBM has an overall satisfaction rating from its users of 3.0 and recommendations from 83.4%. The number of users who would not recommend their systems rises slightly, from 6.9% to 10.2%, but that is partly explained by many users not recommending the obsolete Series 370.

Sperry and NCR both improve their ratings this year. This year 20% more Sperry users than last year say they will recommend their machines to other users. At the same time, fewer users would not recommend their systems – and most of those are 90 Series users.

The overall satisfaction rating for NCR machines is up three points this year, to 2.8.

Users' opinion of the reliability of their mainframes is generally high, averaging 3.3 on the 4.0 index. Those machines with particularly high ratings are Amdahl's 470/V6 (with a 3.8 rating), IBM's 4331 (3.7) and 4341 (3.6), and Honeywell's Level 64 and 66 machines (3.6). Amdahl, NAS and CTL score highest in overall rating, but the sample is small. ICL and NCR have ratings of 2.9. The reliability of ICL's 2970 and 2976 mainframes pull its average down.

However, although reliability of mainframes is generally high, that of mainframe manufacturers' peripherals lags, averaging 2.9 overall. IBM's 3031 peripherals rate highest with 3.4, and peripherals for its other machines are slightly better than average. In this category ICL is slightly lower than average.

Last year's general finding about the quality of technical support – that it falls below the quality of other aspects – is repeated this year. Mainframe manufacturers which are consistently a couple of points below average on documentation, user-education and troubleshooting are Burroughs, ICL and Sperry.

Burroughs, however, has improved its technical support since last year to judge from its ratings: last year it was given an all-round average of 1.8 for technical support, but this year it receives an average rating of 2.1.

Overall, mainframe manufacturers are reported to be quicker off the mark with their hardware deliveries. The proportion of users finding that delivery or installation of their equipment was ahead of schedule rises from 14.6% to 26.9%. At the same time, complaints of late delivery are down overall, from 11.5% to 8.6%.

Users credit CTL, the plug compatibles, Amdahl and NAS and NCR with the largest number of early deliveries. ICL was ahead of schedule with deliveries for 18.1% of its users, compared with 11.7% for IBM. However, 9.2% of ICL's mainframe users reported late deliveries, compared with 5.1% of IBM users.

While hardware deliveries were often ahead of schedule, software deliveries were not. Only 5% of mainframe users reported early software, while 14.8% experienced delays. Just over one quarter (25.6%) of ICL users said that software deliveries had been late.

IBM mainframe users' main problem was to keep up with enhancements and changes to the hardware and software – 19.8% of respondents had this difficulty, especially 3032 and 3083 users. That problem was also reported by a slightly higher proportion of respondents of Honeywell, Sperry and ICL users. Few NCR users encountered the problem – only 4.8% found it difficult to keep up.

Turning to the minicomputer and small business system ratings, the good overall satisfaction level of 3.0 reported last year is maintained.

The 76 users of other, miscellaneous minicomputer companies show a lower overall rate of satisfaction with their machines than last year.

While hardware deliveries were often ahead of schedule, software deliveries were not

minicomputer users slip this year from 2.9 to 2.5, as does the percentage of respondents who would recommend their machines. The main problem identified by users are lack of promised software (35.7%) or support, and late installation of equipment (28.6%).

However, NCR's users remain loyal, with only one expecting to move to another vendor.

Data General, Datapoint and Wang all lose ground on user satisfaction this year. The Data General figures are affected by fewer users recommending its older CS Series and Eclipse machines, and Datapoint gets a low satisfaction rating for its 6000 Series machines. The Wang VS Series gains an overall rating of 3.1 from the 10 user replies. The lower figures for user satisfaction reflect the low number of Wang user replies both this year and last.

IBM rides high in the minicomputer charts, and even its aged System 34 gets a satisfaction rating of 3.1 from 128 users. Prime also comes out well with overall increases in its ratings by users.

User loyalty in the minicomputer sector is strong. The overall proportion intending to switch to another manufacturer's machines over the next year is about 5%. The most loyal are IBM and Hewlett-Packard users – only 0.9% and 1.0% respectively intend to change.

As with the mainframe survey, the quality of documentation offered by minicomputer manufacturers is generally low, with an overall average of 2.5 on the satisfaction index. However, Burroughs, Datapoint and Systime are awarded ratings of 2.0 by their users for documentation. Highlighted as particularly poor are the Burroughs B800 and the NCR 9000 machines with ratings of 1.6 and 1.8 respectively.

IBM gains the highest overall score for documentation at 2.9. IBM's minicomputers are also considered most reliable by users with a rating of 3.7. Hewlett-Packard, GEC, Prime and Wang also get good ratings for CPU reliability. IBM, Hewlett-Packard and DEC gain best ratings for peripherals.

Perkin-Elmer and Honeywell minicomputers have the highest ratings for responsiveness, with 85% and 77.2% of users, respectively, happy with their machines' response time.

IBM does well in the survey for promptness of deliveries both of hardware and of software, although only 24.4% of respondents find that terminals and peripherals carried over from other systems are compatible as promised.

ICL's System 25 minicomputer comes out tops from the point of view of the number of users (83.3%) finding the machine easy to reconfigure or expand – just ahead of DEC's Vax 11/780.

However, ICL users encountered late delivery of software (22.8%) and hardware (19.0%).

A comparison of the mainframe and minicomputer user responses reveals broad satisfaction with most aspects of their machine. However, technical support, manufacturers' applications programs and the ease with which systems can be converted need more attention during 1984.

Copies of the Computer Weekly/*Datapro survey, British User Ratings of Computer Systems, price 62 Swiss francs each, may be ordered from Datapro Services S.A., CH-1164, Buchillon, Switzerland.*

■ **Part two of this survey will appear in next week's issue.**

Manufacturer & model (user response/number of systems represented in brackets)	Overall satisfaction (Scale 1.0-4.0)	ADVANTAGES: Percentage of users happy with response time	ADVANTAGES: Percentage of users finding system easy to expand/ reconfigure	PROBLEMS: Percentage of users finding enhancements/ changes to hardware/ software hard to keep up with	PROBLEMS: Percentage of users not getting all the software or support promised by vendor
	(Average: 2.9)	(Average: 52.9)	(Average: 49.9)	(Average: 19.3)	(Average: 13.4)
Amdahl all models (17/27)	3.3	68.2	63.6	0.0	9.1
Burroughs B3900 (12/15)	2.8	41.7	75.0	0.0	25.0
CTL 8000 (14/30)	3.1	77.8	66.7	22.2	11.1
Honeywell DPS 7 (12/19)	2.7	75.0	66.7	25.0	8.3
Honeywell DPS 8 (10/15)	3.0	58.3	66.7	16.7	16.7
Honeywell Level 64 & 66 (15/18)	2.9	58.8	47.1	23.5	11.8
IBM System 370 (28/39)	2.9	44.1	38.2	14.7	5.9
IBM 3031 (12/24)	2.9	50.0	56.3	6.3	0.0
IBM 3032 (18/35)	2.8	40.0	32.0	28.0	8.0
IBM 3033 (41/62)	3.0	59.2	49.0	24.5	4.1
IBM 3081 (46/76)	3.0	59.2	64.8	7.4	7.4
IBM 3083 (36/50)	3.1	71.8	59.0	25.6	5.1
IBM 4331 (51/52)	2.9	52.9	45.1	21.6	11.8
IBM 4341 (164/231)	3.0	50.0	45.2	21.5	8.1
ICL 1900 Series (11/12)	2.7	36.4	45.5	9.1	0.0
ICL 2946 & 2955 (26/29)	2.8	63.0	40.7	18.5	33.3
ICL 2950 & 2956 (22/33)	2.8	50.0	46.2	11.5	11.5
ICL 2960 (28/56)	2.6	39.4	24.2	27.3	36.4
ICL 2966 (67/154)	2.8	49.4	55.4	18.1	21.7
NAS all models (10/17)	3.3	76.9	53.9	0.0	7.7
NCR 8500 (11/15)	2.8	50.0	58.3	0.0	33.3
Sperry 90 Series (21/44)	2.6	26.1	21.7	13.0	17.4
Sperry 1100 Series (29/37)	2.7	38.7	51.6	32.3	19.4

Fig. 2. User satisfaction with certain mainframe models.

Manufacturer & model (user response/number of systems represented in brackets)	Overall satisfaction (Scale 1.0-4.0)	ADVANTAGES: Percentage of users happy with response time	ADVANTAGES: Percentage of users finding system easy to expand/ reconfigure	PROBLEMS: Percentage of users not getting all the software or support promised by vendor	PROBLEMS: Percentage of users finding computer proposed by vendor was too small
	(Average: 3.0)	(Average: 50.3)	(Average: 64.3)	(Average: 17.4)	(Average: 14.8)
Burroughs B1900 (28/38)	2.9	56.7	66.7	16.7	16.7
DEC PDP-11/34 /50/78)	3.1	58.6	63.8	10.3	12.1
DEC PDP-11/44 (43/72)	3.2	63.0	76.1	13.0	4.4
DEC PDP-11/70 (34/67)	3.0	65.0	65.0	12.5	15.0
DEC VAX-11/750 (37/56)	3.3	64.3	73.8	9.5	7.1
DEC VAX-11/780 (50/129)	3.3	58.3	83.3	11.7	5.0
GEC 40XX Series (19/50)	3.0	44.0	60.0	44.0	12.0
Hewlett-Packard 3000 (55/81)	3.2	54.8	80.7	17.7	11.3
Honeywell DPS-4 (20/21)	2.6	50.0	70.0	5.0	15.0
IBM System 34 (128/155)	3.2	43.5	65.9	8.0	15.2
IBM System 38 (66/73)	3.1	30.3	80.3	22.7	25.8
ICL System 25 (19/33)	2.9	54.6	86.4	18.2	9.1
ICL ME29 (93/112)	2.8	48.5	65.0	21.7	19.6
ICL 2904 (28/34)	2.6	25.0	34.4	15.6	12.5
Microdata Reality (21/33)	3.2	45.8	66.7	37.5	33.3
NCR 9000 Series (17/20)	2.5	44.4	61.1	44.4	22.2
Perkin-Elmer all models (17/36)	3.2	85.0	75.0	5.0	10.0
Prime 750 & 850 (24/47)	2.9	42.9	78.6	14.3	7.1
Prime other 50 Series (32/43)	3.1	56.8	59.5	10.8	8.1
Systime 6000 (17/25)	3.0	80.0	70.0	25.0	10.0

Fig. 3. User satisfaction with certain minicomputer and small business systems.

Manufacturer	Percentage of users who would recommend their system to others		Percentage of users who would *not* recommend their system		Overall satisfaction index (Scale 1.0-4.0)	
	1983 Av:	(1982) Av:	1983 Av:	(1982) Av:	1983 Av:	(1982) Av:
	75.2	73.7)	9.7	12.4)	2.9	2.9)
Amdahl	90.9	(100.0)	0.0	(0.0)	3.3	(3.0)
Burroughs	69.0	(77.8)	14.3	(11.1)	2.9	(2.8)
CTL	93.8	(90.0)	0.0	(0.0)	3.1	(3.2)
DEC	50.0	(80.0)	28.6	(20.0)	3.0	(3.8)
Honeywell	75.9	(73.1)	9.3	(7.7)	2.9	(2.9)
IBM	83.4	(86.2)	10.2	(6.9)	3.0	(3.0)
ICL	63.1	(65.0)	23.3	(16.3)	2.8	(2.8)
NAS	92.3	(–)	7.7	(–)	3.3	(–)
NCR	61.9	(50.0)	23.8	(21.4)	2.8	(2.5)
Sperry	58.3	(38.1)	30.0	(38.1)	2.7	(2.5)
Other	71.4	(69.6)	14.3	(8.7)	3.0	(3.0)

Fig. 4. User ratings – mainframe manufacturers.

Manufacturer	Percentage of users who would recommend their system to others		Percentage of users who would *not* recommend their system		Overall satisfaction index (Scale 1.0-4.0)	
	1983 Av:	(1982) Av:	1983 Av:	(1982) Av:	1983 Av:	(1982) Av:
	78.4	80.8)	10.7	9.2)	3.0	3.0)
Burroughs	64.5	(58.3)	22.6	(19.4)	2.7	(2.7)
Data General	59.1	(78.1)	25.0	(9.3)	2.8	(2.9)
Datapoint	73.7	(91.7)	21.1	(0.0)	2.7	(3.3)
DEC	87.5	(90.1)	5.5	(4.0)	3.2	(3.1)
GEC	71.8	(100.0)	15.4	(0.0)	3.1	(3.0)
Hewlett-Packard	89.2	(90.9)	2.9	(9.1)	3.2	(3.2)
Honeywell	61.0	(57.1)	17.0	(25.0)	2.7	(2.6)
IBM	86.9	(88.5)	6.6	(4.8)	3.1	(3.1)
ICL	72.7	(77.3)	14.4	(13.4)	2.8	(2.9)
Microdata	66.7	(–)	8.3	(–)	3.2	(–)
NCR	55.6	(78.6)	22.2	(7.1)	2.5	(2.9)
Perkin-Elmer	90.0	(100.0)	0.0	(0.0)	3.2	(3.8)
Prime	83.1	(82.4)	3.1	(11.8)	3.0	(2.9)
Systime	76.4	(83.3)	12.7	(5.6)	2.8	(2.8)
Texas Instruments	76.2	(90.9	9.5	(9.1)	2.9	(2.9)
Wang	76.5	(100.0)	5.9	(0.0)	2.9	(3.6)
Others	47.4	(68.9)	21.1	(12.2)	2.7	(3.0)

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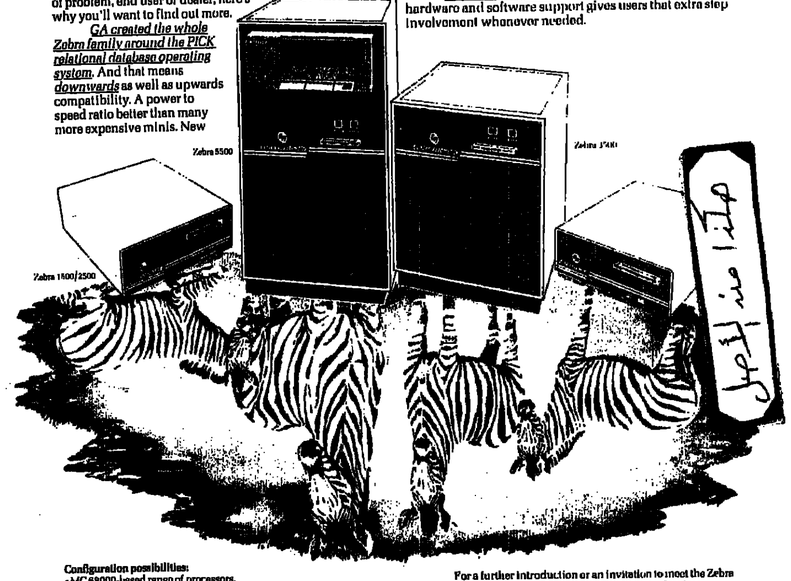

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JENSHEET

Fred Jennings of software and systems house Data Logic has prepared a series of reports on networks called Jensheets. The eighth of these is on communication protocols. Due to lack of space we are obliged to print it in five instalments.

Protocols you will need before and after LANs

THIS Jensheet describes the general principles of operation of data communications line protocols normally used on conventional in-house links and external modem links. Special protocols used on Local Area Networks (LANs) are not covered.

A communications line protocol is a procedure used to control the exchange of data between two or more communicating devices over a point to point or multi-point (multi-drop) communications link. In general terms the communicating devices can be two computers communicating over an in-house/external point to point link; a computer communicating over an in-house/external point to point link; a computer communicating with a number of terminals over an in-house point to point/multi-drop link or external point to point/multi-point link; or two terminals communicating over an in-house/external point to point link.

Communications line protocols can be divided into full-duplex protocols and half-duplex protocols. Usually a full-duplex protocol can also operate as a half-duplex protocol, but the reverse is not true.

Full-duplex protocols support the simultaneous transfer of data in both directions (from device A to device B and from device B to device A) and require a full-duplex point to point communications link.

Half-duplex protocols only support the transfer of data in one direction at a time and can be further sub-divided into Contention type protocols and Poll/Select type protocols. Contention and Poll/Select protocols both operate over half-duplex/full-duplex point to point links and Poll/Select protocols can also operate over half-duplex multi-point (in-house multi-drop) links.

"I didn't catch that block — please send it again."

The following are examples of line protocols:—

Full-Duplex Protocols. The bit orientated ISO High-Level Data-Link Control (HDLC) protocol which is equivalent to the Ansi Advanced Data Communications Control Procedure (ADCCP) protocol. The bit orientated IBM Synchronous Data Link Control (SDLC) protocol. The control character orientated DEC Digital Data Communications Message Protocol (DDCMP).

Half-Duplex Contention Protocols. The most well known are the control character orientated IBM 2780 and the IBM 3780 Remote Job Entry (RJE) protocols.

Half-Duplex Poll/Select Protocols. Most Poll/Select protocols are used for communicating with clustered display systems and the following control character orientated protocols are the best known: Burroughs TD830 protocol, Honeywell VIP protocol, IBM 3270 protocol, ICL 7181 (CO1) and ICL 7502 (CO3) protocols, Univac U-200 protocol.

The early 1960s saw the introduction of a number of equivalent standards for a seven-bit character set for data transmission: USASCII (USA Standard Code for Information Interchange) normally abbreviated to Ascii; CCITT Alphabet No 5; ECMA (European Computer Manufacturers Association) seven-bit coded character set.

These standards defined the following set of 10 seven-bit transmission control characters: SOH Start of Heading; STX Start of Text; ETB End of Transmission Block; ETX End of Text; EOT End of Transmission; ENQ Enquiry; ACK Acknowledgement (positive); NAK Negative Acknowledgement; DLE Data Link Escape; SYN Synchronous Idle.

A control character based on two character combination was also defined: DLE EOT Disconnect Switched Line Connection.

The late 1960s through to the early 1970s saw the introduction of a number of equivalent protocols (procedures) based on the Ascii seven-bit code. ECMA was the main influence at that time and UK computer manufacturers (ICL included) followed the ECMA protocol standards which were called Basic Mode Procedures for Data Communications using the ECMA seven-bit Code.

US computer manufacturers (Burroughs, Univac etc) were influenced by the US Standard Communications Control Procedures as defined by Ansi.

All these procedures specify the general format of a data transmission block in terms of SYN, SOH, STX, ETB and ETX transmission control characters.

There are two general formats for a data block: A format for the first and intermediate data blocks of a transmission SYN,SYN,SYN, SYN,SOH, HEADING, STX, TEXT, ETB,BCC; and a format for the final data block of transmission SYN,SYN,SYN,SYN,SOH, HEADING, STX, TEXT, ETX, BCC.

A data block can contain an SOH character or an STX character or both, so the format of a data block can vary from one manufacturer's protocol to another.

A HEADING consists of only a few characters and is normally used for one of the following reasons: to identify the source of the data block (such as terminal identity — with many protocols the terminal identity is contained only in the first block of a transmission); to qualify the contents of the following TEXT field as data or status information; or to count each data block for security purposes by incrementing a sequential transmission number count (such as 0 to 999).

Error detection for the seven-bit Ascii code is based on an extra character which is added to the end of each transmitted data block. This extra character which follows the ETB or ETX character is known as a Block Check Character (BCC) or Longitudinal Redundancy Check (LRC). The BCC character is formed by performing a binary add without carrying on each of the seven bits of the transmitted characters following SOH (or STX if there is no SOH) including ETB or ETX but excluding any SYN characters.

In addition to BCC error checking, each transmitted seven-bit Ascii character has a parity (bit 8); this is known as the Vertical Redundancy Check (VRC) bit. VRC error checking is the only means of detecting errors in the control character sequences (ACK, NAK, ENQ etc) used in protocols, because only data blocks use BCC error checking.

IBM introduced its Binary Synchronous Communications (BSC) Procedures which included the seven-bit Ascii code but not the associated procedures.

IBM uses three character sets in its BSC procedures: Transcode, a six-bit character set which is now obsolete; Ascii seven-bit code; and IBM eight-bit EBCDIC (Extended Binary Coded Decimal Interchange Code).

BSC uses nine of the ten Ascii transmission control characters previously defined (the ACK is not used).

In addition BSC uses a number of two-character combinations to define further transmission control functions.

The following is a list of these functions with their equivalent Ascii characters in square brackets:

ACK0 [DLE 0] Acknowledgement (general purpose ACK plus ACK for even numbered data block).

ACK1 [DLE 1] Acknowledgement for odd numbered data blocks.

RVI [DLE <] Reverse Interrupt.

TTD [STX ENQ] Temporary Text Delay.

WACK [DLE ;] Wait-before-transmit positive acknowledgement.

BSC uses an extra transmission control function based on a single character; ITB [US] End of Intermediate Transmission Block.

BSC specifies a transparent-text mode which provides for the transmission of binary data. This mode can only be used with the IBM eight-bit EBCDIC code. Any control characters transmitted in transparent mode must be preceded by a DLE (Data-link Escape) character if they are to be recognised as control characters.

The following two character combinations are recognised during transparent-text mode operation:— DLE STX, DLE ETB, DLE ETX, DLE ITB, DLE ENQ, DLE SYN.

At the receiving end, each DLE of a two-character combination is stripped and for each eight-bit data pattern which resembles a DLE, an extra DLE is inserted by the transmitting end.

BSC has another mode of operation known as Limited Conversational Mode which allows a data block to be transmitted in response to a correctly received data block but only if the received block is terminated by ETX or DLE ETX.

When conversational mode is not being used, the normal response to a correctly received data block is either ACK0 (even numbered data block) or ACK1 (odd numbered data block).

FORTRAN

Brian Meek is the director of the Queen Elizabeth College computer unit.

Why standards need improving

Two weeks ago Brian Meek wrote about the project to raise a new Fortran standard. This week he explains his ambitions for the new standard

LANGUAGE standards, as a group, must be the largest and most complex standards yet produced. Most standards specify requirements for a product, though this may be absurd, like a safety procedure.

A supplier of a standard-conforming product has to ensure the requirements are met; the user has the assurance that the features covered by the standards will be present in the product.

The trouble with language standards is that they cover two kinds of product: programs, and systems which process the programs. This means that requirements for two kinds of product, and hence two kinds of supplier and two kinds of user, are muddled.

Many, though not all of the ills of language standards — their ineffectiveness, the widespread confusion about them — can be traced back to this overlapping of purpose.

Arthur Sale, one of the principal architects of the Pascal validation effort, has pointed out that it is difficult, indeed foolish, to try to put all the requirements that one might want of languages and language processors (the hardware/software systems that run programs) into a single document. In practice, the standards produced so far have resolved this problem by concentrating almost wholly on the language itself — the programs.

Requirements on processors are usually little more than that they should correctly process correct programs. Standards committees have spent their time deciding on language constructs, while the implementors have been able to sit back, keep watch, and ensure unobtrusively that when an issue starts to drift off language features into something which might place obligations upon them rather than upon programmers, the matter is left "system dependent" or omitted altogether.

Given that standardising just the language constructs is a large enough task, it seems sensible to accept that this is enough for one standard — provided you do not delude yourself or others that you have finished the job. Unfortunately, to date this seems to be the illusion that has been consciously or unconsciously, fostered.

The myth has even been created that it is unreasonable or even impossible to standardise features commonly omitted from or left "system dependent" within languages standards.

The first ambitious aim of the UK project is to shatter that myth. If there are difficulties in standardising requirements upon processors, most are political and not technical. The need is too great for the myth to remain unchallenged any longer — one has only to look at the portability problems, for programs and people, which still remain with our so-called "standard" languages, without even beginning on quality requirements.

The new "method of specifying requirements" standard is a modest step towards tackling these areas, but hand in hand with the modest aim is the more ambitious one of showing that standardisation of requirements upon processors is achievable.

Language buffs might like to regard the proposed standard as a "meta-standard" — it would be perfectly possible to use it to draw up a specification of requirements for Fortran processors and then standardise that. I hope that government agencies or large corporations might do precisely that, for in-house standards.

Starting with an indirect standard is more acceptable politically, more easily achievable, and more immediately useful than going for a direct standard. But its existence may lead people to realise that a direct standard is achieveable after all, and is not the horrendous thing it is painted to be.

My personal ambition (not shared by everyone on the project, I admit) is that the idea of a direct standard will become acceptable and that this will happen.

Yet another advantage of this indirect, gradualist approach is that there would be no need to scrap the indirect standard — it could remain as a safety net for those too timorous to go the whole hog.

Lest the idea of direct standards in this area should still terrify the Fortran community, it is worth pointing out that direct requirements covering some relevant items already exist in other language standards. For example, the Minimal Basic standard includes some requirements on exception handling and documentation.

As a user of both languages for a good many years, I fail to see what there is about Basic that is so special that it can have direct requirements on processors included in a standard, whereas Fortran cannot.

Which brings me to the final point, the remaining major ambition: if we can produce a standard, direct or indirect, for Fortran processors — and we know we can — there is no reason why others cannot be produced for other languages: Pascal, Cobol, PL/1, or whatever. It was a conscious decision on the part of the responsible BSI committee that this Fortran project is just a pilot scheme, to demonstrate that such things are possible.

Fortran was chosen partly because it has a stable standard likely to hold for some years, because it has a demonstrable crying need for such a standard, and because a good deal of the groundwork had already been done, by people in the BCS Fortran Specialist Group, led by Alan Clarke and David Muxworthy.

Thus once this standard is published, others on the same lines can be expected — ideally produced alongside, or only slightly behind, the primary language standards. Those who look closely at the working draft, or the future published draft for comment, will find that underneath the Fortran-related surface is a framework largely independent of the particular language. This is no accident — it was designed that way.

I'd go further. I believe, though it has not yet been generally discussed, that what we are doing can be extended way beyond the languages area, to software generally, or any systems as they affect the user. This may seem an overweening ambition, but I do not believe it weens excessively.

I would go so far as to condemn as irresponsible anyone who thinks that the Elysium of post-Cobol, post-Fortran computing will not need standards.

So please don't think this exercise is confined to a few frenzied Fortran freaks. It could affect you. And you. Yes, even you in the Alvey workshop.

■ Those who would like to follow up some of the points raised in this article can look at my NCC Guide No. 15 to computing standards, the one on programming languages, and forthcoming issues of the Journal *Computers and Standards* published by North-Holland.

I would go so far as to condemn as irresponsible anyone who thinks that the Elysium of post-Cobol, post-Fortran computing will not need standards

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PRINTERS AND TERMINALS

The Japanese threaten to take over the printer markets

John Kavanagh sets the scene for our six-page special feature with an Oriental warning of things still to come

WHEN the leading UK computer company starts selling Japanese terminals and the world's number two computer firm loses two of its five UK terminal distributors there is clearly something peculiar about the market.

But in the last 13 months ICL has gone to exhibitions to sell Japanese products to systems houses and other third parties, while two distributors have dropped Digital Equipment terminals.

These examples are typical of a market which has been hit by the almost simultaneous arrival of the microcomputer and the Japanese. Printer manufacturers in particular are nervous about what the Japanese will do next. And meanwhile the terminal and printer distribution business has staggered from one crisis of confidence to the next over the last year.

But the industry now believes the market will largely sort itself out this year. The extent of the Japanese threat will become clearer as Japanese firms try to move up from slow-speed printers to compete head-on with European and US manufacturers in the medium and high-speed markets. And cowboys on the distribution side will be wiped out as users become more educated and demanding of their suppliers.

The arrival of the microcomputer brought demand for printers which were equally low in price. "If you look at Western markets you see cost has become all-important," says David Allison, printer marketing manager at UK manufacturer Newbury Data Recording.

"The Japanese have perfected the art of producing low-cost, high-volume goods. US and European companies simply can't hope to compete with low-cost 80-column Japanese printers."

Allison's views are reflected in the fact that in the first half of last year UK imports of Japanese printers almost trebled in volume and value. The figures also show that low-cost units were involved: for, by volume, the Japanese products represented 55% of all printer imports – yet by value they accounted for only 25%.

> **"The Japanese have perfected the art of producing low-cost, high-volume goods. US and European companies simply can't hope to compete with low-cost 80-column Japanese printers."**

However, Allison says that as users get their first taste of microcomputing they soon want more powerful machines – and that has brought demand for faster, heavy-duty printers. The industry is now nervously awaiting the Japanese response to this demand.

"The Japanese firms are squeezing speeds of 180 characters a second out of their original low-cost mechanisms," Allison says. "But that's as far as they go. We're getting a lot of business at the bottom of our range from micro users, because although we're more expensive than the Japanese here our products are more robust, being built for higher speeds.

"But after their success at the bottom of the market the Japanese will move up to meet us head-on. In the past Western manufacturers have given in to the Japanese in the slow-speed market and concentrated on the faster, more robust end of the business. But if the Japanese are moving up to compete with them they can't now abandon that part of the market and move up still further. They must now stand and fight."

Allison believes Western firms can hold their own in that fight. "For the faster products we all have to use more expensive motors and materials, which we all buy on the same worldwide markets," he says.

"This means the Japanese have the same costs as the rest of us. Where they might score is in the Japanese government's attitude towards support: companies don't have to pay back as quickly as here, where shareholders want a quick return. But even so the bigger Japanese printers we've seen so far are more expensive than ours, because of the shipping costs.

"This shows we can build on our local advantages: we manufacture here, we support and train customers using local people and we speak the language. Users like a single source for printers of all speeds, training and support and so on."

Such fighting talk hides the fact that many manufacturers have taken an "If you can't beat 'em join 'em" attitude. Indeed, Newbury Data has added low-cost low-speed Japanese products to its range. ICL is buying printers and terminals from Japan to build them into its own systems and to sell as OEM products.

Other big names in these markets are having their products made in Japan and other Far East countries. Even one distributor, European firm Geveke Electronics, has become a "manufacturer" by designing its own terminals and getting them built in the Far East.

Geveke points out that labour is cheap in countries like Korea and Taiwan, so many companies have been set up purely as high-technology manufacturing concerns. They do not try to compete against the marketing know-how of big Western corporations, so they do not have sales, distribution and field service overheads.

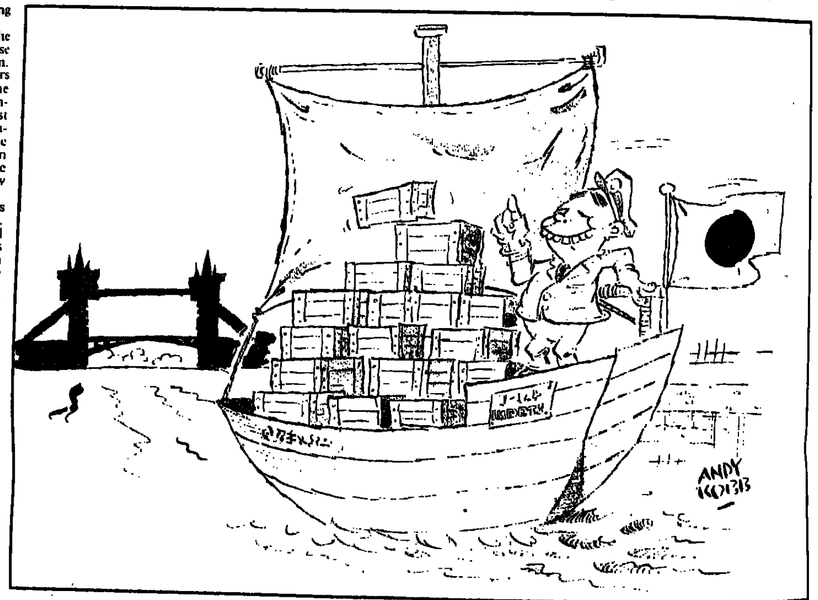
Geveke says many of its big-name suppliers were getting their products built in the Far East, thus adding another link to the distribution chain, so it decided to cut out one link by dealing directly with the manufacturer.

It argues that this means it can have the products designed specifically for the European market.

But Geveke's move also raises another issue which has bit the terminal and printer business. The company says making its own products gives it more control over the outlets for those products.

This control is needed to stamp out "fly-by-night dealers which switch from one product to another depending on where the best deals are to be made. They might even go abroad to find a local distributor or manufacturer's subsidiary which is overstocked and glad to sell at cut rates.

These firms have no expertise in particular products and no commitment to any manufacturers.



The losers are the users, getting no help if a product needs attention, and the manufacturers, which can get a bad name because of the poor service from the dealer.

Geveke marketing executive Pat Bloyce says the market has got worse in the last year – but 1984 will be a bad year for the cowboys. "Everyone's getting in on the act, but it will sort itself out by the end of the year," she says. "This is partly because there are so many companies competing and partly because users are better informed and will shun the cowboys."

Allison at Newbury Data Recording comes back to the Japanese again on this issue. "Many Japanese manufacturers have given their products to any dealer who asked," he says. "This has led to a lot of fighting between dealers over prices and many are not making proper margins.

"As a result they are no longer prepared to take certain products. So if a manufacturer wants dealers it must guarantee margins. This all comes down to proper control of the dealer network. Japanese companies have realised this and are now sorting their networks out."

Even big and apparently reputable computer firms have had distribution problems – though of a different kind – which raise a further issue over the basic design of terminals.

In the last year two of Digital Equipment's five UK terminal distributors have dropped the company's products. The latest, Zygal Dynamics, says DEC wanted the distributors to sell outside its own computer user market but that the products were difficult to sell to users of other manufacturers' computers. This was because they were too expensive, especially when compared with Japanese terminals.

Even one of DEC's successful distributors, Rapid Recall, agrees – but also points to DEC's latest products, which bear out the thinking among other suppliers.

"DEC terminals have not been wholly suited to the general market because they have options specifically aimed at DEC computer users," says Jim White, terminals division manager at Rapid Recall.

"But the new VT200 family will knock competitors like Televideo and C Itoh right out."

White's point about offering basic, general terminals is echoed elsewhere. "There are dangers in making a basic product more complex," says Mike Ayres, marketing manager at CPU Peripherals, which distributes Esprit Systems terminals.

"A manufacturer is on safe ground with familiar and well-established production technology. What comes out of the factory is something that has the reliability you get with volume production. And the price is bound to be favourable."

Ayres' final comment draws attention to the fact that it is not the terminal that matters so much as the way the entire application system is designed: "We should be devoting more thought to intelligibility rather than to intelligence. What matters to the end user is not where the processing is done but how to sort out significant information from the mass of data available."

These views are borne out by a recent survey of US suppliers, which shows that standard alpha-numeric terminals account for over 60% of all terminal revenues. The market is growing 15% a year.

ALLISON: "We're getting a lot of business at the micro end."

The printers and terminals feature is published to coincide with the Peripherals '84 exhibition to be held next week at the Cunard International Hotel, London. Backed by the Peripherals Suppliers Association, Peripherals '84 takes place from Tuesday, January 31 to Thursday, February 2. Opening times are from 10.00 to 5.30 on Tuesday and Wednesday, and from 10.00 to 4.00 on Thursday.

PRINTERS AND TERMINALS

'Graphics quality' is a term much bandied about, but how many peripherals have really got it? asks David Casey

Making numbers come to life

DESCRIBING video display units and printers as "graphics quality" devices is a marketing ploy used by manufacturers in a keenly competitive marketplace. Frequently, that claim cannot be justified – as the multi-sided circles and inconsistent shadings bear witness.

The fact that such claims are being made for peripherals indicates the level of interest in the commercial world for systems that can turn files of unexciting numerical data into piecharts, tables and graphs.

Powerful, 32-bit computers merging graphics, data and text have their own niche in the market. Systems like the ICL Perq and the Apple Lisa are standalone machines with a high resolution screen supplied as standard.

Pre-dating the standalones as an integrated graphics system is the Rank Xerox 8010 Star terminal, a workstation for the vendor's office automation system. It is also the system which pioneered the use of the mouse as a graphics controller.

> **As the data on a display increases the operator's ability to absorb information decreases**

But there is also a definable market – and by every account an extremely lucrative one – for peripherals that can support more conventional computers with graphics capabilities. The concept of a high resolution screen that takes multiple "windows" to view concurrent activities has now been borrowed by DEC from the ICL Perq and the Apple Lisa.

Integration of text with data processing and graphics features underlies the Vax station range, which DEC announced in mid-1983. Aiming to achieve the graphics performance required by advanced technical users, the Vaxstation 100 is a black-and-white display monitor system. It is understood that a colour version is being planned.

As its name implies, the Vaxstation was designed for a particular family of hardware. The system was conceived as a terminal to the 32-bit Vax range of processors, and it is unfortunate that there can be no market for the station among the 300,000-strong PDP-11 user base worldwide.

Graphics applications envisaged for the system are rather more advanced than business statistics. The typical operator will edit an engineering drawing, add word processed notes, and call information from a database elsewhere on the computer. A maximum of three types of application program could be running on separate areas of the screen.

In developing its System Display Architecture, DEC has defined concepts such as "virtual display", "pasteboards" and "virtual screen". Application software for any of the concurrent tasks on the Vax is imaged to separate virtual displays, none of which has to be brought into view until required.

At the user level, "viewports" are set up to access the contents of the screen windows and generate a composite image. The only constraint on image manipulation is the size of the screen and its resolution: the Vaxstation 100 terminals were launched with 1088 pixels across the screen, and 864 vertically.

The high resolution of the Vaxstation screen compares favourably with that of other DEC graphics products – the VS11 display tube, for example, is 512 pixels square. The system is intended to bring DEC into the Tektronix marketplace, by emulating Tektronix's 4014 screens. For more basic applications, however, Vaxstation becomes a VT100 screen – the two protocols even running in overlapping display areas.

Away from the rarefied atmosphere of engineering software are the swelling ranks of terminals offering "medium" resolution graphics. Six hundred by 450 pixels on a rectangular screen would be an ideal standard for devices running with business information systems and many technical applications; a market that Hewlett-Packard is attempting to reach with its HP2700 terminal.

This type of peripheral has a valuable role in reducing the graphics workload on a host computer. Manipulating technical data into graphical form on a supermini or even a mainframe blocks the system from more relevant activities. The HP2700, for example, stores incoming x-y co-ordinates as vectors in its own memory and converts the information into raster format for screen generation.

The HP 2700 is essentially a colour terminal with 512 by 390 points displayed on the screen. Panning accesses a virtual display area equivalent to 32K positions in either direction, while the zoom facility scales from one thousandth full size through to an enlargement factor of more than 60.

Industrial psychologists are quick to show that as the amount of data on a display increases, the ability of an observer to absorb information falls away.

The assortment of hatchings and shadings adopted for monochrome terminals goes some way to improving receptium, but a surfeit of criss-crossed lines can prove as much of a distraction.

Partly to overcome this problem, terminal suppliers have been turning to colour displays. Hewlett-Packard on its 2700 device, for example, provides a total of 4096 different hues – although the user is limited to 16 of these at a time.

> **Laser machines can handle between 10 and 20 A4 pages a minute, irrespective of image density**

Where HP has gone further than many other suppliers in colour presentation is with its approach to colour selection. Red, green and blue can be blended to create tones required, or the user can select hue, saturation and lightness as the determining factors.

Below 400 pixels by 300, the graphics capability of a terminal becomes progressively more limited. The low resolution is particularly noticeable on lines within a few degrees of the vertical or horizontal: the stepped effect which results makes these devices unsuitable for all but the most basic charts and diagrams.

Being able to manipulate graphics data through a Vaxstation, or take expanded views of a personal computer board layout on an HP terminal, may add a new dimension to software applications. But unless there is a comparable standard of reproduction at the output stage, much of the impact created will be lost.

Outside the scope of computer peripherals is conventional photography – the only way to retain a perfect coloured image of a screen display. Laser technology provides a fair representation, however, but only in black and white. Laser printers, expensive substitutes for matrix and letter quality devices, resolve images at between 200 and 600 lines per inch.

The lower laser scanning rate is many times greater than that of a video display, but scrutiny of the output reveals that circles are still being printed as polygons. A shortfall in quality is offset by the flexibility of most laser devices to merge text files and graphics into the same hard copy.

There is also the advantage of speed: laser machines reaching the market can handle between 10 and 20 A4 pages a minute, irrespective of image density.

Laser printers trace their origins to photocopier technology, like the electrostatic plotters now widely used for the output of technical drawings. Resolving images at the 200 dots per inch level, devices such as the Calcomp 5000 series produce an output comparable with that from a laser printer, but with only a fraction of the throughput.

Constructing an image from continuous lines produces a superior image to anything assembled from dots. Pen plotters, accommodating up to eight different colours, achieve a high standard of presentation. Output speed falls rapidly, however, as the volume of information increases, while text production should be limited to titles and legends.

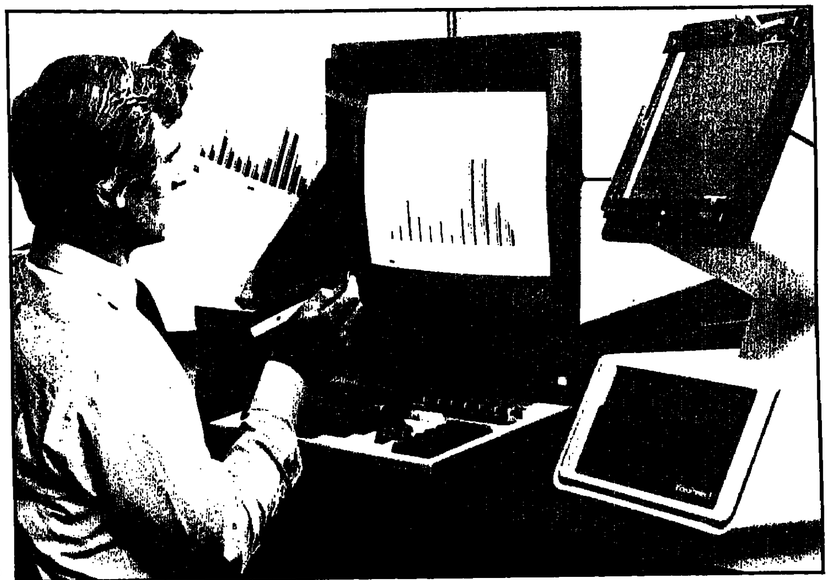
Hewlett-Packard inevitably produces pen plotters with systems matching each tier of its graphics computer range. But the company also has a graphics device based on thermal technology.

The HP7240A is a vector printer with an output on black or blue heat-sensitive paper. It is not dependent on drawing pens, so it can reproduce a monochrome image from an HP graphics terminal.

Driving a dot matrix machine at the limit of its specification can provide graphics output to an acceptable quality. The mechanical characteristics of the printer – whether successive passes of the print head can be interlaced, for example – will determine whether it is suitable.

Matrix devices are being joined in the marketplace by needle printers in which the data drives a row of pins to generate the image.

Needle matrix printers, falling steadily towards the price of daisy-wheel machines, are the best value among graphics output devices. But printer manufacturers may well have developed cheaper but more sophisticated graphics hardware by 1985.



Interest in the commercial world for systems that turn unexciting numerical data into piecharts, tables and graphs is growing.

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The cost of keeping a computer up and running will account for a rising share of DP budgets, writes David Casey

Maintenance takes the rap

GOULD . . . "Scope for co-operation both at a technical level and in training."

EVERY industry needs its whipping boy, and computing is no exception. There has to be someone, somewhere along the line, to take the stick when things go wrong. Manufacturers are sufficiently convinced of their own infallibility that they are never to blame for a system collapse.

With a trend towards suppliers offering hardware bundled with third-party software, it is no longer good politics to level criticism at the software house. Since the customer signs the cheque at the end of the day, the fault can never lie with him. And so the only target left is maintenance.

Responsible for everything from cleaning the VDU screen to diagnosing subtle errors in multi-layered programs, the maintenance sector of the computer industry really does play a vital, if somewhat covert role.

The user assumes that a fully maintained installation is the norm – that the heads on the disc drives can read and write data 24 hours a day; that the printers will keep on working after the month's statements have been output; and that a complex program is 100% free from bugs.

Analogous to the intensive care service of a hospital, total support can be provided for any system, however small, but at a cost which may not be warranted by the application. How large the bill will be for maintenance depends on an array of factors – not the least significant being the complexity of the installation and the amount of response time demanded.

For any given level of support, there is a finite cost; one to be set against the loss that would arise if a system were not up and running through mechanical breakdown or software collapse.

End-user prices of business systems seem destined to continue falling – at least during the first six months of 1984. Maintenance charges, which are based on the increasing cost of skilled technicians, cannot fall at the same rate. The cost of keeping a computer up and running will therefore account for an increasing share of DP budgets.

The end user either accepts the extra cost, or tries to make do with a lower level of support. High-budget prestige installations running a bank of mainframes or superminis can absorb the overhead, but the newer generation of small system users will attempt to circumvent the expenditure.

The introduction of distributed processing systems and microcomputers marks a change in emphasis on maintenance requirements. While the large DP user has been prepared to consider an in-house solution, such an approach would not be economical under present conditions.

Far greater reliance will be placed on manufacturers' service departments and the independent maintenance organisations.

Under pressure of rising costs, there is an incentive to re-assess maintenance requirements. While judicious economies can be made, there is an irreducible minimum below which standards cannot fall without jeopardising the business. It is a case of knowing which corners to cut, and when.

The printer is certainly one area where there is no room for penny-pinching. Electromechanical devices, dot matrix printers and letter quality machines are the Achilles' Heel of any computer installation. Even minor faults, such as mis-alignments in the paper feed or mis-timing of the printing head are immediately obvious to the user. If the fault is allowed to continue uncorrected, there is a risk of permanent damage.

Mills Associates is a company with a vested interest in printer maintenance, through its third-party work on systems from ICL mainframes down to Commodore micros. John Chapman, the operations manager, noted a trend in printer sales policy. "It is becoming increasingly common for computer manufacturers to sell their machines without an output device. While this ostensibly leaves the user to select the best printer for an application, it does avoid complications for them over an inherently unreliable piece of machinery."

Reaction from small system users to the cost of annual maintenance contracts is that the service organisation does relatively little for its money

Reaction from small system users to the cost of annual maintenance contracts is that the service organisation does relatively little for its money – if the preventative maintenance element were scrapped, expenditure could be reduced at a stroke. The maintenance companies are quick to justify the importance placed on regular servicing: there will always be problems created by the mixture of dust and lubricating oil which pervades any printer unit.

As Chapman pointed out, there are other problems which are not experienced on processors and video terminals. "We have to account for mechanical wear and tear. Any moving part will move out of specification at some time. The fine adjustments required to reset the system cannot be made by the user. There will be abrasion on the printing heads, and further tuning required to counteract tractor feed equipment wear."

Responsibility for at least some of the maintenance problems encountered must lie with the printer manufacturers, who fail to liaise sufficiently with the support companies. Constantly introducing new devices may be a response to user demand, but it does little to improve maintenance standards. There is a "learning curve" while the service engineers become accustomed to every new model, and the systems develop a track record in the field.

Even limited experience of the system, however, can indicate an inherent fault in the design. If a defect is indicated to the manufacturer, there is no certainty that action will be taken until several thousand more of the devices have reached users.

One reason for the lack of action is that most of the printers bought in the UK are manufactured in Japan or the US. Suppliers' distribution companies are marketing outlets – without the resources in Europe to investigate the problem – and fail to appreciate the significance of many defects reported to them.

Chapman would like to see closer co-operation between service companies and the manufacturers, to make maintenance easier. He accepts that the design of peripherals has been improving. "Suppliers are taking more notice of maintenance requirements. It is rarely necessary to strip the machine down to get at the main board."

The high cost of servicing small business systems has inevitably attracted a multiplicity of independent maintenance suppliers into a lucrative market. At the risk of a system failing through inadequate preventative servicing, first time users are likely to shop around for the cheapest maintenance contract they can find.

Aware that inexperienced or under-resourced operators could tarnish the reputation being gained by the more responsible service companies, the CSA has set up a third-party maintenance group.

The chairman is John Gould, who sees the group as a representative voice to government and industry. But how could 14 independent companies – many competitive with each other – work together? Gould explained. "There is scope for co-operation: both at a technical level and in training. Several joint agreements have already been signed, where a company is not represented in an area, but has an obligation to maintain a system. Co-operation on spares is another major area open to us."

What is lacking from the brief, however, is any formal representation to manufacturers; a role which Gould sees as impracticable. "With almost 120 different manufacturers' products supported by the members, the task would be impossible."

Computer users are perhaps more concerned with the standards that can be set through such an organisation. The code of conduct and briefing notes published by the group, and which outline what a customer should look for before entering into a maintenance agreement, are a step in the right direction. A supplier falling short on professionalism would risk being censured by the CSA and expelled from the association.

CSA sanctions apart, there is a strong argument in favour of users buying their maintenance contracts from suppliers recommended by manufacturers. There may be no financial saving, but the threat of losing the vendor's goodwill is a sufficient incentive for

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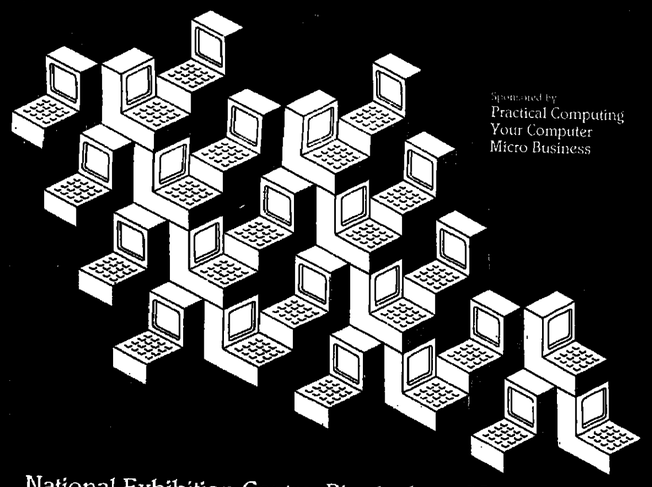

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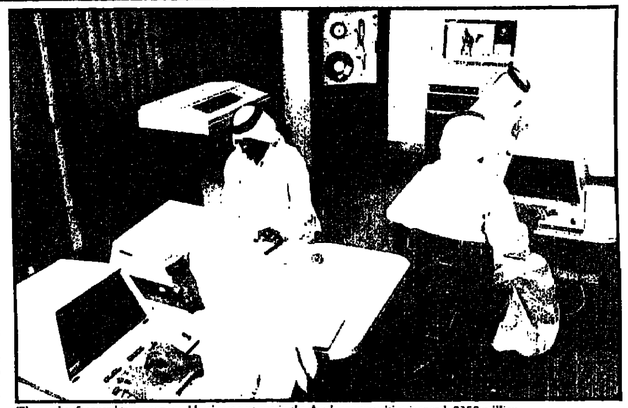

The market for word processors and business systems in the Arab communities is worth £250 million.

Hardware is no longer holding back software. The cheap laser printer is now awaited, says David Casey

WITH one quarter Mbyte of memory on even the least sophisticated business machines, software designers are no longer constrained by computer hardware. High density Winchester disc storage and graphics-quality video displays ensure that the creative talents of system designers can be used to the full.

It is only at the output stage of a computer system that the limitations start to appear. Until the laser printer – with its 90,000 dots per square inch scanning resolution – falls to a quarter of its current price in the market, electromechanical impact printers will remain the link between applications software and hard copy.

For the majority of data processing applications, output quality is rarely a problem. Fixed pitch characters generated from a low-resolution dot matrix will suffice for all but a small proportion of user requirements.

Adding an element of text to the application calls for a higher standard of presentation, but this can be met by the increasing number of daisywheel and thimblewheel machines. Where perfection is the objective, metallised daisywheels supporting proportional spacing satisfy the most critical user. And there is now a generation of hybrid machines: in technology a variant of the dot matrix; in output quality a close approximation to the "petal" printer.

The problems of interfacing a computer with an impact printer are minimal – provided that the output is to be in a "conventional" language, like English or French. A handful of keys for accented characters is the limit of the changes required to make a system saleable across the western world.

Problems only start to arise when users demand that information on their terminal and at the printer appears in a medium like Arabic or Hebrew, two languages not noted for the simplicity of their structure. With a market for word processors and business systems in the Arab communities worth an estimated £250 million during 1984, however, suppliers must be able to overcome any technical hurdles and meet these requirements.

Displaying Middle Eastern character sets on a video screen introduces a complication for peripherals – the degree of processing required to accommodate subtle changes of character shape within a word

Displaying Middle Eastern character sets on a video screen, and generating printed output to an acceptable standard, introduces a complication for peripherals – the degree of processing required at the output stage to accommodate subtle changes of character shape within a word.

Capital letters apart, the structure of a Latin character remains constant: each letter retains the same shape wherever it is used. Designers of a bi-lingual system have to accommodate as many as four different shapes for certain letters in the Arabic alphabet.

Early word processors allowed one keystroke for each symbol, as on an Arabic typewriter. The operator had to make the correct choice of character to suit the context.

"Contextual analysis" is the software routine which a word processor or business system undertakes automatically to adjust the shape of each character. Both the terminal and the printer have to recognise the context in which each letter appears and modify the characters without operator intervention.

Character shaping on the computer is achieved either as a feature of the application software or by modifying the operating system to support Arabic. The first route has been taken by companies writing bi-lingual packages for the IBM-PC, but it cannot restructure PC-DOS.

Falcon Systems of Maidenhead is one of a handful of systems houses which have extended the operating system – in this case CP/M-86 – so that software originally written for an English system runs transparently in both languages.

Dr Faez Tuma, managing director at Falcon, explained that the real problems with Arabic arise at the printer stage. "While a low-resolution dot matrix may produce acceptable English characters, it rarely generates acceptable Arabic. These machines cannot offer the flowing style and deep character tails which are characteristic of the language."

How a printer handles context analysis depends on the degree of intelligence in the device. Perhaps the best example of an intelligent machine is the Santec multi-media printer. Its Arabic typeface chips handle their own contextual analysis: the application package sends a character down the line and the printer logic deduces the correct shape before output.

Tuma says problems can occur with less sophisticated machines. "Dumb matrix printers work from a fixed character set, so the context analysis must be handled at the computer. Relatively few of them will allow an Arabic font to be down-loaded."

The intelligence of printers like the Santec S700 needle matrix creates its own obstacles. The context algorithm treats the last character in a word which is followed by a full stop or comma as though it were a medial character: the punctuation mark prevents the system setting it in the correct final form.

Provision may have been made for punctuation in the application software, but this cannot override the logic in the printer font chip. As Faez Tuma commented: "What we require is either less intelligence or more flexibility!"

Developing interfaces can prove time-consuming since there is no measure of standardisation in printer characteristics. Falcon, for example, spent a total of five man-months writing a suitable driver for the Qume, and was faced with a similar input for other printers.

Dr Tuma explained how the problem has been solved. "We have had to develop a new driver in three parts. The first is an application level, which accepts embedded control characters. A context layer on top of that is specific to the type of printer – if the device cannot handle the analysis inherently, the routines are built into this stage."

The matrix printer resolution, which is an important consideration in the choice of an Arabic system, is even more critical for graphics software. The Trilex organisation of Kingston developed Doodle, a multi-purpose graphics package, to run on Sirius and Apricot machines.

Screen resolution was the least of its problems. The difficulty was in finding printers which could produce the fine details required for engineering drawings, at a cost which would not make the system uncompetitive compared to other printers already on the market.

Doodle is essentially a graphics design tool, but one which accepts text merged into the drawings. Any printer selected to run with the package has to meet minimum specifications in either mode.

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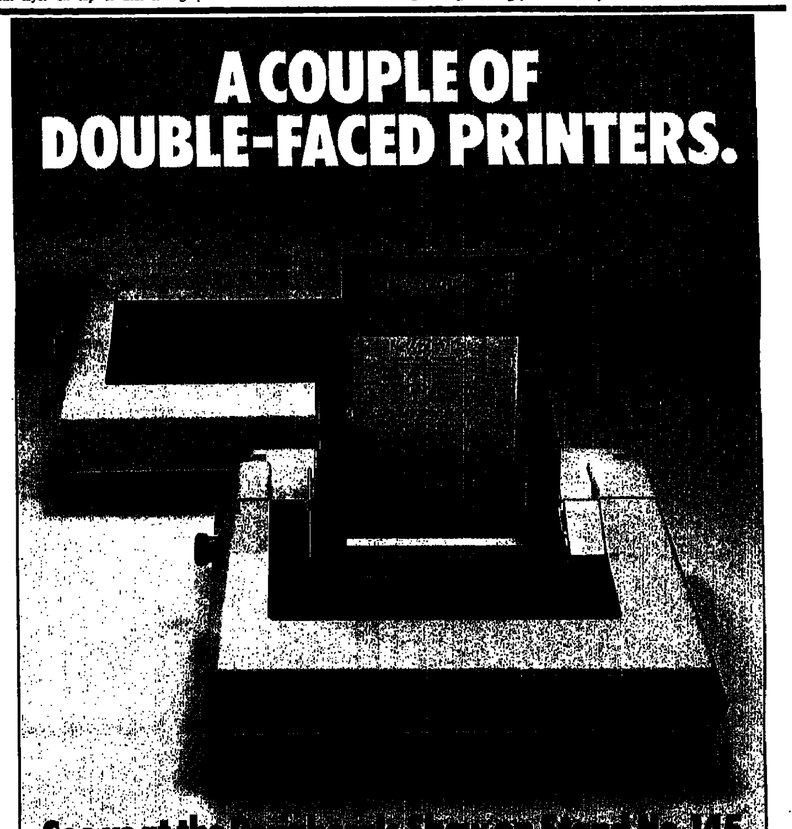

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PRINTERS AND TERMINALS

A new peak of 1.6 million units have come into the British market . . . John Aczel analyses the latest trade figures

Peripheral imports rise to all-time record levels

Peripheral imports totalled nearly 230,000 units during September, compared with less than 200,000 during June.

IMPORTS of peripheral equipment into the British market have continued to rise markedly and have been at a record level in recent months. In particular, imports of storage units as well as of terminals and data communication equipment have been growing rapidly, according to the latest trade statistics.

Overall imports for the peripheral sector amounted to nearly 230,000 units during September compared with less than 200,000 in June. And for the first nine months of the year, the cumulative figure has reached a record figure of 1.6 million units.

In terms of value, however, imports have been level-pegging and amounted to £85.5 million. This was about the same as three months earlier, while the total for the first nine months of the year remained steady, at around £700 million.

Evidently, prices of peripheral products have continued to come down and, in September, they averaged £370 per unit; this was a considerable fall compared to the situation earlier in the year, when the average price was around £440 per unit.

Admittedly, any price comparisons of this nature should be treated with caution, due to the fact that peripheral products include a wide range of equipment of different kinds. These prices do not include wholesale and retail margins and are only given at the port of entry.

Thus, the ultimate user usually pays a higher price; nevertheless, the trend in the cost of imports sets the scene, and, evidently, even lower prices may be seen in the computer field during the coming months.

Importers have been keen to reduce their prices for a number of products

These figures also suggest that foreign suppliers of peripheral equipment are willing to cut their margins, even though sterling has been quite weak against other foreign currencies, particularly the dollar. Competition has been quite fierce in the peripheral sector and importers have been keen to reduce their prices for a number of products, particularly for printers and storage units, during this period.

The US has continued to be the main supplier of peripherals and its sales have been well maintained at over £40 million. This accounted for over 45% of total deliveries during September, but increasing competition has been seen from a number of sources.

In particular, sales by West Germany have been progressing well and reached nearly £8 million, while those from the Netherlands have been steady at around £7 million. Increasing imports have been reported from some of the Scandinavian countries, especially Sweden.

In the case of Japan, sales have been fluctuating in value terms, following the upsurge which occurred earlier in the year and have ceased during September. This dip, however, is believed to be only temporary, and higher deliveries by Japan are likely to take place during the remainder of 1983.

In terms of product groups, there has been an increase in sales of storage equipment, particularly for magnetic tape units. Their volume went up to 45,000 units, which was double that reported during June. Moreover, a significant increase in deliveries of terminals has been seen, while data communication products have risen appreciably, amounting to nearly 70,000 units during September.

British exports have also gone up but the rise has been more limited compared to imports. The total volume of sales abroad amounted to 73,000 units in September as against 60,000 in June, while the cumulative figure has been satisfactory, reaching over 465,000 units during the first nine months of 1983.

In terms of value, however, exports have been lower and amounted to £44 million in September. This represented a drop of 14% compared to June, while, for the first nine months of the year, the total was lower than expected, amounting to £370 million.

As in the case for imports, exporters have been lowering their prices markedly. In September, the average price of a peripheral unit exported was around £600 and this compared with about £800 three months earlier. Thus, significant price cuts have been occurring, especially for storage units and printers.

British exports have performed well in some markets, particularly in the US. Deliveries to that country reached over £3 million, which was a record figure for September and represented an increase of 12% compared to June. In some European countries, higher sales have been reported, particularly in West Germany, where they rose 10% to over £10 million.

In contrast, in the Benelux countries, lower deliveries have been seen, while sales to France have been under pressure.

The trend in exports to other regions of the world has been mixed and considerably lower deliveries have been reported to some of the Middle East countries, especially in Saudi Arabia. This market has been an important one for British peripheral suppliers, but, in September, sales fell to one of the lowest figures ever recorded, amounting to just over £200,000.

Deliveries of storage units performed well and exports of these products more than doubled in volume to 26,000 units. A useful increase in sales of printers was also recorded, but, for visual display units, the trend was easier during this period. For terminals and data communications equipment, an upward trend has been recorded in volume terms.

Nevertheless, in terms of value, they were under pressure and amounted to around £15 million in September as against over £18 million three months earlier.

As a result of the continued rise in imports, Britain's balance of trade plunged further into the red with regard to peripheral products. Thus, a gap of £41 million was seen in this sector during September as against a deficit of £35 million in June. The cumulative deficit has also been very high, reaching £337 million during the first nine months of 1983.

In addition, a marked imbalance in volume terms has been reported, amounting to 156,000 units during September. This was a marked increase compared to June, when imports of peripherals exceeded exports by 138,000 units.

At the moment, there are no signs to suggest that this gap will be reduced to any significant degree, as imports are likely to continue to move ahead strongly.

Admittedly, exports have been performing better, and this trend is likely to continue, at least in volume terms. Higher sales to Europe will take place and some manufacturers of peripherals will take advantage of the strength of the dollar to improve their deliveries to the US.

Competition has been fierce in the peripheral sector.

	September 1983 £000	June 1983 £000	Jan-Sept 1983 £000
Belgium-Luxembourg	1,327	1,483	11,477
France	7,665	8,591	63,481
West Germany	10,226	9,282	74,542
Italy	4,402	5,774	39,023
Netherlands	2,316	2,867	18,889
Saudi Arabia	696	991	7,347
South Africa	225	2,517	12,211
Spain	942	1,120	10,046
Switzerland	1,244	2,112	13,044
Sweden	1,569	1,691	13,238
US	2,197	2,761	17,946
	3,098	2,775	26,354

Table 1 – British exports of peripheral equipment (by main markets)

	September 1983 £000	June 1983 £000	Jan-Sept 1983 £000
Belgium-Luxembourg	1,373	1,749	12,377
Canada	1,168	467	5,747
Denmark	2,522	610	6,487
France	4,351	4,391	31,858
West Germany	7,989	7,824	67,003
Ireland	3,138	1,748	19,415
Italy	2,542	3,401	24,667
Japan	7,447	12,058	73,006
Netherlands	6,995	7,058	52,423
Spain	544	389	4,628
Sweden	1,959	1,798	17,095
US	40,527	41,422	356,634

Table 4 – British imports of peripheral equipment (by main suppliers)

	September 1983 £000	June 1983 £000	Jan-Sept 1983 £000
Peripheral units			
Disc storage units	10,343	9,102	70,425
Magnetic tape storage units	544	1,206	5,629
Other storage units	1,352	120	2,615
Printers	4,519	4,636	38,604
Readers and punches	115	262	1,416
Visual display units	12,616	17,199	123,584
Other terminals and consoles	835	1,092	7,840
Other peripheral units	13,942	17,378	118,762
Off-line data processing equipment			
Punches, verifiers and calculators	5	–	133
Other equipment	611	508	5,019

Table 2 – British exports of computer equipment by product groups (by value)

	September 1983 £000	June 1983 £000	Jan-Sept 1983 £000
Peripheral units			
Disc storage units	27,606	24,393	195,130
Magnetic tape storage units	3,588	3,076	33,547
Other storage units	655	845	7,412
Printers	14,262	17,329	135,980
Readers and punches	423	512	4,003
Visual display units	10,111	11,408	92,947
Other terminals and consoles	3,326	3,706	29,313
Other peripheral units	25,549	24,714	208,049
Off-line data processing equipment			
Punches, verifiers and calculators	32	73	367
Other equipment	821	864	7,802

Table 5 – British imports of computer equipment by product groups (by value)

	September 1983 No.	June 1983 No.	Jan-Sept 1983 No.
Peripheral units			
Disc storage units	25,973	10,337	90,057
Magnetic tape storage units	360	388	3,460
Other storage units	332	54	860
Printers	11,289	10,096	79,811
Readers and punches	61	79	1,016
Visual display units	15,200	20,581	143,574
Other terminals and consoles	2,241	2,953	15,614
Other peripheral units	17,785	16,306	132,288
Off-line data processing equipment			
Punches, verifiers and calculators	2	–	380
Other equipment	505	308	4,267

Table 3 – British exports of computer equipment by product groups (by volume)

	September 1983 No.	June 1983 No.	Jan-Sept 1983 No.
Peripheral units			
Disc storage units	43,040	51,625	371,402
Magnetic tape storage units	45,028	20,543	229,128
Other storage units	396	2,726	7,656
Printers	31,144	43,546	322,789
Readers and punches	942	1,755	11,284
Visual display units	29,804	35,482	254,290
Other terminals and consoles	10,481	5,428	53,423
Other peripheral units	68,657	37,824	346,841
Off-line data processing equipment			
Punches, verifiers and calculators	58	213	943
Other equipment	774	1,530	15,602

Table 6 – British imports of computer equipment by product groups (by volume)

PRINTERS AND TERMINALS

Typewriter waits for its cue

The typewriter is being groomed for the starring role of terminal. Hugh Busby looks at the likelihood of success

WHY should anyone want to use a typewriter as a terminal? After all, there is already a vast range of terminals on the market, purpose-built for specific jobs.

A sceptic's view? Certainly the typewriter manufacturers would have us think so. An increasing number of machines currently or soon to be available display features such as communications interfaces, disc drives, screens and operating systems, which seem to savour more of the worlds of test and data processing.

Is this just marketing hype by the manufacturers, induced by fear of the predicted demise of electric typewriters and the booming sales of word processors? Or is the typewriter destined to play a star role in that long-awaited office of the future?

From the way typewriter manufacturers are hedging their bets, it seems unlikely that even they know the answer. The briefest survey of the products available reveals that nearly every possible technological development has been catered for, to some extent. Word processing, telex and teletex, online data entry, or straightforward dumb printing under computer control – you can, in theory at least, do any of these on a typewriter.

Price range is equally comprehensive, stretching from the negligible to the exorbitant (with facilities to match). Entry level is a pretty remarkable £169.95. This will buy a Brother EP-22, an electronic portable which is small enough – and at about 3lb, light enough – to go in a briefcase.

Battery-powered, it offers a lot of facilities for the money, including a built-in RS232C interface which allows it to be used as an output printer with a wide range of micros.

At that price, the EP-22 is inevitably a lightweight contender.

The typewriter is by no means prepared to lie down and die

As a printer, it might get the home computer user out of a jam, but it has no place in the office. The print mechanism is not designed for heavy usage, it has no facilities for sheet or tractor feed, accepts a limited range of stationery, and print quality from the 7×9 dot matrix is – well, no better than you'd expect.

More interesting from the business viewpoint is the newly-announced Brother EP-44. Similar in design to its junior version, and still reasonably priced at around £250, its main feature is two-way communications, again using the RS232C interface.

It is more rugged and versatile than the EP-22, has a 4K text memory – holding about two A4 pages – text editing, and a letter quality 18×24 dot matrix.

The EP-44's most obvious application is for the businessman working away from the office who needs to transmit documents back to headquarters, or gain access to a computer.

While the two Brother portables have the field more or less to themselves for the moment, in the realm of office typewriters the competition is already well established. Nearly all leading manufacturers now provide interfaces and various add-ons for at least some of their machines. Among them, the Olivetti range is representative of current developments.

Olivetti has for some time been offering an add-on interface for its best-selling ET 121. By the end of the quarter it will have extended the option to all machines in its ET and Praxis ranges. Prices, not This gives all-in prices from about £700 to £2,000.

Olivetti's line of development can be gauged from its recent announcements. An upgrade of the ET 121, the Octet 121, comes with up to 4K of memory and communications protocols allowing it to be used as a true KSR or MSR terminal. This approach is being adopted by other manufacturers including Facit and Hermes.

The ultimate weapon in Olivetti's armoury is the ETV 300 – in effect, a word processor without a keyboard. Based on a Z-80 processor, it has a 32K memory, twin 5½in floppy discs and a 12in screen. For a keyboard you use – unsurprisingly – an Olivetti typewriter.

Other manufacturers are following similar lines of development, adding their own individual variations.

Ericsson, for example, has decided to address the budding teletex market with the first BT-approved teletex terminal, in the form of a modified and upgraded Facit typewriter. At present it costs £2,200, plus another £800-£1,200 if you want discs.

In considering typewriters as alternatives to purpose-built terminals and word processors four criteria spring to mind: cost, durability, speed and ease of use.

On cost the typewriters don't appear to do too well. In too many cases, upgraded machines and add-ons seem uncompetitively priced by today's standards.

A top-of-the-range typewriter costs over £1,500, and prices for serious office machines start at about £500 for a standalone machine. Compared with this, for about £700 you can buy a screen, keyboard and printer, which will allow you to access the full power of your computer – assuming, of course, that you already have one.

When typewriters are upgraded to word processors, the equation becomes more complex. Prices tend to be roughly equivalent to standalone word processors, but detailed investigation may reveal significant differences. You won't get communications facilities at present, and you may not get all the features you would expect from a purpose-built WP.

On durability and speed, too, the typewriters seem to compare unfavourably. Typically, the duty cycle, or MTBF, of a typewriter needs to be about a quarter that of a printer terminal, though there are one or two notable exceptions.

Similarly, printing speed for a typewriter used as an output printer tends to be about 20-25 characters a second, compared to 40 or more cps for a similar daisywheel print terminal.

Ease of use must depend to a large extend on the user; but the typewriter again clearly has its disadvantages.

The typewriter keyboard is unsuitable for use as a data entry terminal because it lacks a separate numeric keypad, and equally for word processing, since it lacks cursor controls and the full set of function keys to which the WP operator is accustomed.

However, manufacturers would hardly have invested development funds in such a wide range of equipment which stood no chance of success.

One person who argues strongly the case for extending the use of typewriters is John Bayliss, chairman of the Information and Word Processing Association.

While conceding the limitations of typewriters as data entry terminals and output printers, he considers they have a useful role as input devices to word processors. His argument is largely ergonomic. No two keyboards, he points out, are exactly alike, and a typist who has become accustomed to a particular layout will almost

Bayliss illustrates this from experience in his own office at accountant Moore, Stephens & Co where four typists, all with their own typewriters, share a single word processor.

Throughput on the word processor, he says, is much slower because only occasional use is made of it, and a re-learning process takes place each time.

In this situation, he points out, if the typewriters have interfaces it makes sense to link them with the word processor. They can then be used for the bulk input of text, and only the editing needs the WP.

This may prove to be an interim solution only and even so could lead to problems where heavy usage is envisaged. But clearly the typewriter is by no means ready to lie down and die in the path of word processors and micros.

The makers' ingenuity seems certain to ensure that it has a long life ahead of it yet.

Hugh Busby is a freelance journalist.

Typists almost certainly work slower on unfamiliar keyboard layouts.

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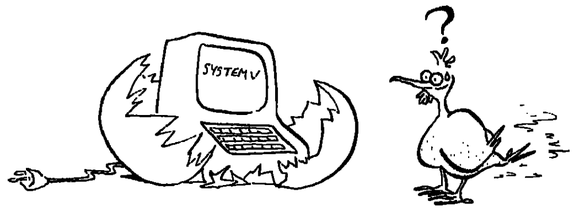

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Graftek cuts costs of CAD/CAM

LATEST addition to the Graftek range of computer-aided engineering systems available in the UK through Engineering Computer Services is a low-cost mechanical CAD/CAM system called Comet. It is based on Gould SEL hardware with a 32-bit CPU architecture.

A feature of the hardware is that it can operate in any normal office environment. There are no additional costs involved with the installation of air conditioning, temperature control, etc.

Another advantage of the new modular system is its ability to be expanded from a single workstation installation up to 12 workstations without making the initial hardware and software obsolete.

Potential users who previously could not justify the initial investment in a high level system can now install CAD/CAM with minimum initial costs and expand as needs arise, says Engineering Computer Services.

With Comet, the first-time user is able to obtain a practical system offering 3-D mechanical design capabilities for less than £100,000. Then, as the workload dictates, the system can be extended by the addition of various software packages or further terminals.

Comet is fully interactive and can be used by personnel with no formal computer training. The basic hardware comprises 32-bit CPU with one Mbyte main memory; 160 Mbyte Winchester disc drive; 45 Mbyte cartridge tape unit for disc back-up and archival storage and the recently introduced Meteor intelligent colour workstation with high resolution, flicker-free anti-glare display.

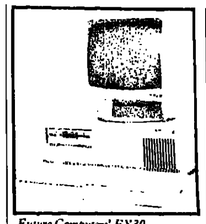
Software provided for the basic system is Graftek Geometric Modelling Software (GMS) for two- and three-dimensional mechanical design and draughting.

Facilities offered by the Meoteor colour workstation supplied with the Comet system include local pan, zoom and drag, plus pick functions. These increase the speed of graphics manipulation and reduce processing and communications requirements.

The range of hardware options which can be supplied initially or for subsequent system expansion includes line printer, plotter, hard copy unit (either black and white or colour), additional main memory and extra storage devices, further Meteor workstations (up to a total of 12) and a voice input facility.

Additional software options cover the entire Graftek range of modular packages.

Engineering Computer Services (CW), Piccadilly, Tamworth, Staffs. B78 2ER. Tel: 0827 873300.



Future Computers' FX30.

Storage for the Future

HIGH-SPEED mass storage is a new dimension for the Future Computers range of micros.

It comes in the form of the FX30 range with an integral Winchester hard disc, offering a storage capacity from five to 50 Mbytes.

Users will also be offered the option of integral tape back-up units, in place of the floppy, supplied through a £1.3 million deal between Future and Cipher Systems.

Price of the FX30 is around £3,000 for a single machine. "We believe this is the only micro of its type in this price range," says Bob Jones, managing director of Encotel Systems, which has an exclusive contract to distribute Future Computers in the UK.

The FX30 has a built in local area network facility as standard.

Future Computers (CW), PO Box 306, Purley, Surrey. Tel: 01-689 0111.

System will time and datestamp automatically

SHELTON Instruments has introduced a Calendar-Clock facility for its Sig/net 2 microcomputer. It records the time, including hours, minutes and seconds; and the date, including day, month and year.

Calendar-Clock enables the operator to time and datestamp files and automatically records the date when the system is switched on.

It may also be used when sending a telex message via the computer to enable the message to be automatically transmitted at a time specified by the operator.

In addition, MCNOS, Shelton's proprietary CP/M compatible, multi-user operating system, has facilities for automatic datestamping of files.

Calendar-Clock is an optional extra module which may be included in a Sig/net system at the time of purchase. Alternatively it can be fitted into a system on the user's premises by a Sig/net dealer.

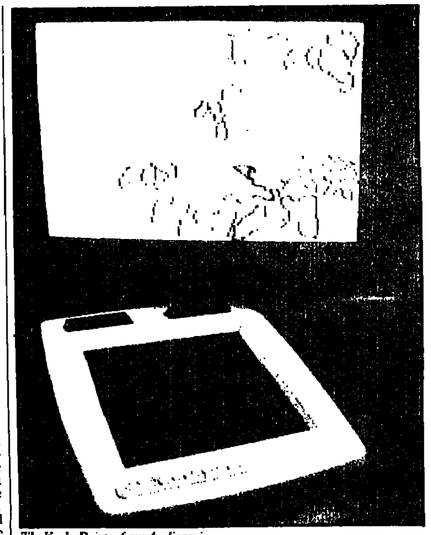
There is a variety of industrial and scientific applications where the Calendar-Clock module may be used, such as process control and work study. It is one of many modules that Shelton offers for OEMs to use when adding intelligence to scientific and industrial equipment.

The modules are housed in a vacuum-formed plastic case and can easily be interconnected by a simple ribbon cable to the Sig/net Ring.

The Calendar-Clock module is available to Sig/net 2 users from their appointed dealers and to OEMs from Shelton Instruments.

The one-off cost of the module is £59.50.

Shelton Instruments (CW), 74/77 White Lion Street, London N1. Tel: 01-278 6272.



The Koala Painter from Audiogenic.

Pen is mightier than the board

KOALA PAINTER, a graphics tablet from Audiogenic for the Commodore 64, allows users to produce full colour drawings and illustrations directly on screen.

The package consists of a graphics tablet with separate stylus, disc-based software, and an instruction manual.

Connection to the 64 is simple yet the package enables novices to produce high quality full colour illustrations far superior to the graphics included in some commercial games software, says Audiogenic.

The Koalapad, which interfaces directly into the 64, is relatively small (8in x 6in x 1in) and lightweight (1lb) so that it can be held naturally in the hand. The active pad surface is a 4in square that is slightly recessed with two push-buttons located above it.

The unit is contoured so that it can be grasped easily in the left hand with the left thumb pushing one of the buttons, while the right forefinger or stylus does the drawing.

The Koala Painter menu, displayed on the screen, is divided into three sections: commands, brushes and colour palette. The user is able to use the menu and with previously stored designs, before deciding on colouring.

A brush option allows the user to vary the thickness of lines.

The command section of the menu gives the user total control over the formation of his picture. Freehand drawings can be supplemented by integral facilities for lines, frames, boxes, rays, circles and discs.

A choice of eight brush sizes allows the user to vary the style of illustration by increasing or decreasing line widths.

The complete system costs £89.95 (including VAT).

Audiogenic (CW), PO Box 88, Reading, Berks. RG1 2SN. Tel: (0734) 595647.

Studio best seller makes its UK debut

THE Artron 2000 Studio Computer is about to make its debut. In less than six months it has become one of the best selling studio computers in the world for a number of reasons; it is simple to use and no knowledge of computers is necessary. The user just holds the pen and draws on the board but, at the touch of a button, the pen becomes an airbrush, technical pen or marker, with the ability to reproduce over 16 million colours, according to Graphic Products.

A complex sales graph can take the best part of a day to produce by conventional methods. With the computer it can take about 10 minutes and the image can be produced in full colour on 35mm slides, film or instant prints.

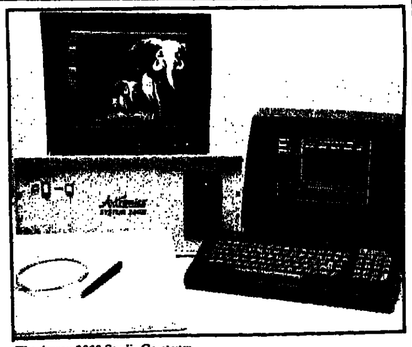
Changing colours can be done in seconds which is an invaluable aid in packaging, concepts, layouts etc. It also has the ability to store, enlarge and reduce photos, layouts and illustrations.

Artronics, the US producer of the computer, believes that "the Artron 2000 will revolutionise the graphics industry and the 'tools' which are currently being used."

Howard Posener, managing director of Graphic Products, London, the exclusive distributor for the Artron 2000, is of the opinion that the computer will have the same effect on the studios as the repro camera. This too, when first introduced, was considered a luxury product but has turned out to be an essential aid.

The system is on sale only through selected graphic dealers employing specialist staff who can give full after-sales service.

Graphic Products (CW), 36 Manchester Street, London W1. Tel: 01-486 9802.



The Artron 2000 Studio Computer.

Design processes automated

NOW available on Harris computers is Anvil 4000, a CAD/CAM package which has been designed to automate fully the engineering design and manufacturing processes.

Anvil 400 provides a fully-integrated design, management information and manufacturing system for the total automation of product engineering. It originates from Manufacturing and Consulting Services (MCS) and is distributed in the UK by Impell Corp.

An important feature of Anvil 4000 is its comprehensiveness: the one system is capable of handling the design, design analysis, drafting and machining processes.

Harris Systems (CW), PO Box 27, 153 Farnham Road, Slough SL1 4XD. Tel: (0753) 34666.

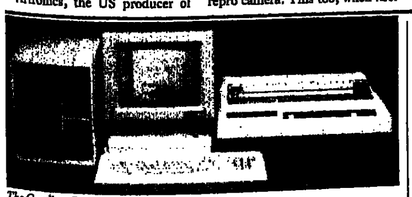
Add-in memory for Eclipse

AN ADD-IN memory board designed for the Data General Eclipse MV/8000 32-bit super minicomputer is announced by Mostek. The new card, the MK8033, can accommodate both 16K and 64K dynamic RAMs (5V only); the 64K version has a capacity of one megabyte and is compatible with both the 16K and 64K RAM versions of the MV 8000.

Additional features of the MK8033 include timing based on the MV/8000 system clock, four-way interleave on board, and separate read and write data paths so that one complete four-word cycle can begin before the previous one finishes.

During refresh a memory read cycle is performed to check for errors, which are then corrected by the memory controller.

Mostek UK (CW), 1 Valley Drive, Kingsbury Road, London NW9. Tel: 01-204 0322.



The Cardkey Pass 3000 security system.

Mini-based security system

A SECURITY and personnel management system, launched by Cardkey Systems, the Pass 3000, is designed to provide a sophisticated alarm monitoring, security and personnel management service to medium-sized users.

The system is targeted at companies with up to 2,500 personnel.

It is based on a modular minicomputer and comes with a desk-top operator console, a 10 Mbyte Winchester disc, and a single 1 Mbyte floppy disc.

Cardkey Systems (CW), 23 Stadium Way, Portman Road, Reading, Berks. Tel: (0734) 415211.

Hard copy data camera

THE GDS-1000 hand-held Polaroid SX-70 hard-copy camera system costs £158, yet still produces brilliant colour reproduction and excellent monochrome resolution, according to Graphic Display Systems. It uses the automatic Polaroid SX-70 Alpha or AutoFocus cameras with a range of optical hoods fitting all displays.

The user simply holds the camera and hood device against the screen and presses the button. The film automatically appears out the front of the camera and develops automatically in about two minutes.

Graphic Display Systems (CW), Bright Haven, Robin's Lane, Lolworth, Cambridge CB3 8HH. Tel: (0954) 81074.

The GDS-1000 Polaroid SX-70 hard copy data camera.

PRODUCTS

Battery hand-held terminal

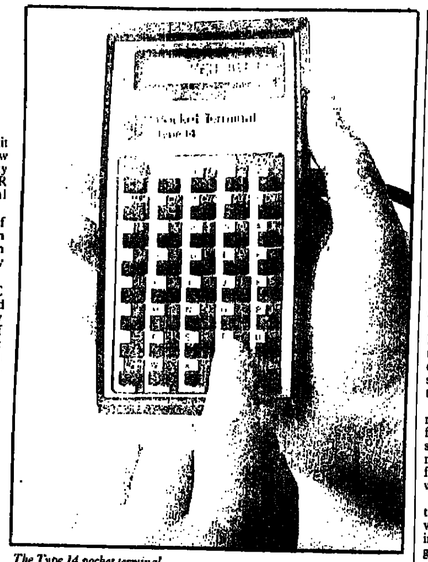
A BATTERY option, 14-digit LCD display and a number of new operating features give versatility to the latest addition to the GR Electronics' pocket terminal range.

The low power consumption of the Type 14 unit, and its built-in battery option means that it can operate completely independently of a host device's power supply.

The TTL-compatible RS232C interface and 300 or 1,200 baud signalling speeds, give it versatility as an I/O device for a wide range of industrial and scientific microsystems, as well as a toolkit item for anyone working with digital systems.

The unit sends and receives a full 128 Ascii code set, and displays numerals, upper and lower case alphabet and 26 symbols. It has a 32 character memory, all accessible for display, which allows messages to be composed offline and sent as a burst when required.

GR Electronics (CW), Faircak House, Church Road, Newport, Gwent NPT 7EJ. Tel: (0633) 124147.



The Type 14 pocket terminal.

IBM-PC gets videotex support

A VIDEOTEX terminal support feature for use with the IBM Personal Computer has been announced by IBM Product Sales. It permits use of the PC as a videotex retrieval terminal communicating with either Prestel or Teletel based systems.

Videotex support enables the Personal Computer to connect, via normal telephone lines, to a host computer and to retrieve, edit, store and print pages of information.

Connection to a public videotex network can provide fast access to financial news, market reports, stocks, shares and commodities news as well as more general information available on such networks.

Access to an organisation's internal videotex network can provide data processing and information facilities within the organisation, giving separate departments easy access to selected information, plus the ability to edit, store, transmit and distribute information to other departments or branches.

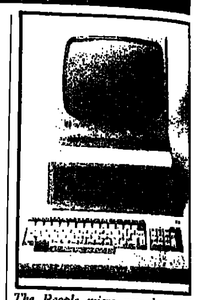
The videotex terminal support software contains national keyboard translation support allowing attachment of the PC to most national videotex systems such as Teletel in France, Videotel in Italy, Prestel in the UK and Datavision in Sweden.

The feature offers, besides basic terminal support, the ability to save and retrieve displayed pages, display the directory of saved pages and to perform offline editing.

The minimum PC configuration required has 128K memory, one single-sided diskette drive, DOS 1.1 or 2.0 and a colour monitor that supports 50Hz synchronisation.

The videotex communications adapter, which may be co-resident in the system unit with the IBM colour graphics adapter, provides videotex terminal support for European PAL television sets. It also supports those sets with the Peritel interface in addition to direct drive RGB colour video monitors with 50Hz synchronisation.

Olympia Business Machines Co. (CW), Olympia House, 199/205, Old Marylebone Road, London NW1 5QS. Tel: 01-262 6788.



The People micro now has a 10 Mbyte Winchester hard disc.

Winchester option for the People

THE Olympia People 16-bit microcomputer is now available with a 10 Mbyte Winchester hard disc. This optional upgrade makes the People microcomputer suitable for large volume business applications, says Olympia.

People is one of the fastest 16-bit micros marketed internationally by a major supplier. It is offered with two operating systems. CP/M 86 and MS-DOS

IBM UK (CW), PO Box 41, North Harbour (Baltic House), Portsmouth PO6 3AU. Tel: (0705) 694941.

Inmac's Cassette File.

Protection for tapes and cartridges

COMPUTER users can organise and protect up to 18 digital (or audio) cassettes with a smoke-tinted acrylic desk-top file available through Inmac.

The Cassette File comprises 18 separate cells, providing individual protection for tapes.

The heavy gauge acrylic top protects tapes from dust and liquids. The file will also store Atari and TI game cartridges, and is under a one-year Inmac warranty.

Inmac UK (CW), Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: (09285) 67551.

Low-cost solution to memory programming

THE IQ 150 Series of low-cost programmer systems from Sintrom Electronics is designed to service the programming, verification and support of logic and programmable memory storage chips. The systems aim to offer a microprocessor-based solution to logic and memory programming and are driven by the IBM/Apple II Heath personal computers.

A feature of the IQ 150 Series is the user programmable sockets. The system allows the user to define the operating parameters on the programming socket, ensuring that additional requirements can be met in the future. The controlling hardware provides more than 25 different voltages from +35V to −50V on six intelligent pins at discrete intervals to cover most devices.

The CP/M compatible software is supplied on 5¼in diskettes and contains a complete database for most commonly used devices. This means that adding a new device is simply a matter of changing the diskette.

A full graphics display package takes the user through all the phases to service a selected part. Audio feedback is provided at the end of each operation or upon error detection. Full English error messages are displayed on the CRT.

Because the software is CP/M compatible, the hardware can also be used for the full range of microprocessor development requirements including cross-assembly, editing, linking and emulation.

Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berks RG2 0LS. Tel: (0734) 875464.

The key to easier WP

MIDLECTRON Special Products Division has designed and produced a WordStar keyboard for the TeleVideo TS803 system which enables the use of WordStar word processing facilities without having to learn complicted control key commands.

Ergonomically styled in the TVI970 terminal keyboard format, the WordStar keyboard allows the user to give single key-stroke commands for all the main functions most commonly used in WordStar.

Midlectron Systems Division Midlectron House, Nottingham Road, Belper, Derby DE5 1JQ. Tel: (077 382) 6811.

The 803B Data Link Analyser from Halcyon Data Communications.

Automatic monitoring device

THE Halcyon 803B Data Link Analyser, launched in the UK at Compec '83, provides a revolutionary tool for the network controller or software designer.

Evolved from the Halcyon 801A, 802A and 803A, the 803B combines automatic monitoring facilities, with full simulation of DTE or DCE for Async, Bisync, X.25, SNA and DDCMP protocols.

The operating software is loaded from micro floppy disc storage (3½in), giving the user a choice of running "canned" test programs, or writing his own test programs to store on disc.

Data from the line is also stored on floppy.

All standard interfaces are available to enable the 803B to operate at data rates up to 110 Kbps.

Halcyon Data Communications (CW), Aldwych House, Madeira Road, West Byfleet, Surrey KT14 6DA. Tel: (09323) 51674.

Buzzbox for the hobbyist

A V21 MODEM which costs £79.95 including VAT from DaCom Systems, is called Buzzbox and is expected to appeal to the hobbyist and professional micro user.

It can be connected to the normal telephone line and, unlike acoustically coupled modems, is less prone to errors caused by extraneous noise between the telephone handset and the modem.

As a 300bps full duplex modem, Buzzbox complies with the international CCITT V21 standard which is still the most popular speed for telephone network use. It operates in both originate and answer mode.

Buzzbox is battery-powered, but for prolonged use an optional mains adaptor is available.

DaCom Systems (CW), 200 Coniburrow Boulevard, Milton Keynes MK14 7AH. Tel: (0908) 676797.

The DaCom Buzzbox V21 modem.

No-dial telex system

A SYSTEM for the formatting and transmission of telexes, utilising a user's existing Xerox microcomputer or word processor, has been developed by the Dunstable-based firm of Greenwood-Smith Associates.

The GSA Telex System is said to offer the automated office the benefits of simple telex production with a "no-dial" facility for the transmission of messages to various addresses.

In this way the need for paper tape is eliminated and "perfect" messages may be sent down the line each time.

Re-tries are handled automatically up to the British Telecom limit.

This is the first time the system has been made available for the Xerox range of equipment in the UK and covers the Xerox 820I, 820II, 820II/M, the Diablo 3000 and 3100 range, and the BCL 3300 model.

A special directory broadcast feature enables the user to compile a tailored directory to an almost limitless number of names and addresses.

Access to the directory is either by a named individual or telex number.

A feature of the system is that groups of individuals can be identified to receive messages by the use of a simple code instead of going to the lengths of indicating each separately.

Greenwood-Smith Associates (CW), PO Box 41, Toddington, Dunstable, Bedfordshire. Tel: (0525) 878

Design for a quiet life

NOISE in the computer environment substantially reduces operator efficiency. The Storcall range of acoustic covers for printers is British-designed and manufactured, and is built to provide a quieter, cleaner and more productive working environment for the printer.

Storcall says it can offer a silencer for almost every printer including sheet and hopper feeds. The specifications include a tinted acrylic lid, high output, low noise Turbo fan, internal 13 amp power socket, 25mm sound absorbing foam lining, and anti-vibration and sound absorbing base.

Storcall, Tele-Acoustics (CW), 28 York Street, Twickenham, Middlesex. Tel: 01-891

PRODUCTS

Line printers 'low on noise, high on duty'

THE P-300 XQ and P-600 XQ, now available from Pragma, are high-duty dot-matrix printers which operate quietly enough to be used without problems in normal office environments, it is claimed. The low operating noise – given as less than 55dBa – is achieved by an acoustically-designed cabinet which provides a fully-enclosed paper path.

Both models offer three printing modes and a plot mode. The P-300 XQ provides 132 characters/line data processing print and 176 or 220 characters/line compressed print, both at 300 lpm, and high-speed drafting at 400 lpm, 132 characters/line. Plotting speed is 16.6 in/min.

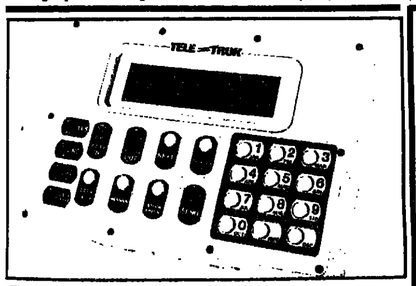
The P-600 XQ provides data processing print at 132 characters/line and compressed print at 198 characters/line, both at 600 lpm, and high-speed drafting at 800 lpm. Plotting speed is 33.3 in/min.

Features common to both models include Ascii parallel input, full line buffered; bottom paper feed, with adjustable 8-pin tractors; form width from 3in to 16in, in up to six parts; and plot resolution and density respectively 120x72 and 60x72 dots/inch.

One-off list prices, including installation, are £5,050 for the P-300 XQ and £6,544 for the P-600 XQ.

Pragma is a marketing organisation supplying and servicing computer and associated equipment for business data processing, computer aided design and manufacture, colour graphics computers and displays, floppy disc systems and VDUs.

Pragma (CW), Pragma House, Weirvale Industrial Estate, Denham Way, Rickmansworth, Hertfordshire. Tel: (0923) 720326.



The environmentally sealed terminal from Pathway.

Easy-to-use terminal

AN environmentally sealed intelligent terminal from Pathway Systems does not have a standard keyboard. Instead, operation is by a set of function keys large enough and well spaced out for even the biggest fingers to use easily and accurately, says Pathway.

The terminal allows direct connection into radio or wire links to a host computer or other peripherals.

It is designed for use in locations such as warehouses (for stock control and rotation), in food processing and in other industries where constant control and information flow for raw and finished materials is required, and for agricultural applications such as crop counting and the assessment of quality and content.

The unit is claimed to be ideal for harsh industrial applications both inside and outdoors, as well as in more straightforward factory and office locations.

The terminal uses a CMOS 6303 processor with 32K ROM and 16K RAM plus 100 bytes of non-volatile RAM. Three communication ports are provided, two full duplex 20mA current loop ports with a maximum rate of 9.6K baud. A third is capable of supporting either RS422 or FSK Modem V23: the RS422 allows operation up to 19.2K baud and is suitable for local area network configurations.

Pathway Systems (CW), Mulberry House, 46 Boxworth Road, Elsworth, Cambridge CB3 8JQ. Tel: (09547) 254.

Amdahl introduces concentrator

AMDAHL has announced the 4470 network concentrator, a new packet switching product. An extension to Amdahl's 4400 series of communications products, it will allow users to communicate with private and public X.25 data networks and computer systems using the industry standard system network architecture (SNA).

Kenneth W. Simonds, executive vice-president, said: "The addition of the new 4470 network concentrator to Amdahl's growing line of communications products illustrates the company's commitment to becoming a major supplier of telecommunications systems."

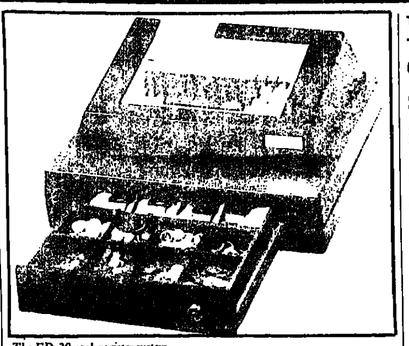
Amdahl (UK) (CW), Viking House, 29-31 Lampton Road, Houslow, Middlesex TW3 1JD. Tel: (01) 572 7383

Arrow adds bit map display

ARROW Computer Systems has announced a Bit Map Display (BMD) for use with Q-Bus systems fitted with Arrow's QU68000 processor board. The QU68000 is a Unix-compatible MC68000-based processor using one quad slot on the Q-Bus and is said to raise the performance of the LSI-11 to rival that of a PDP-11/44 and Vax 750.

The BMD addition requires a further quad slot and comprises four main components: a single quad control/interface board, a 17in monitor, a DIN keyboard and a "mouse" for cursor control.

Arrow Computer Systems (CW), Arrow House, Blenheim Road, Longmead Industrial Estate, Epsom, Surrey KT19 9BA. Tel: (03727) 42557.



The ED-20 cash register system.

Flexible PoS register

A POINT-OF-SALE register which is portable and flexible has been launched by Epson and P&M Data Services—

Known as the ED-20, the new register is described by its developers as the first computer which emulates a till, rather than being a till which emulates a computer.

The main advantage is that it can be positioned anywhere in a shop. It is not affected by power failures and can provide useful emergency back-up and can support bar code reader and laser scanning facilities.

It is available at £950.

Epson (UK) (CW), Dorland House, 388 High Road, Wembley, Middlesex HA9 6UH. Tel: 01-902 8892.

Daisywheel duo offers self-test

AT £299 Silver-Reed's new EXP500 bi-directional daisywheel printer offers many of the design and engineering features of the Silver-Reed EXP550 printer.

These include precision controlled carriage movements in 1/120th inch to facilitate bold, shadow and underscored printing in 10, 12 and 15-pitch. Forward and reverse paper feed is controlled in units of 1/48th inch, giving true superscript and subscript.

Also incorporated in the design is a self-test feature in the form of an automatic five-line test printout. The EXP550 has a printing speed of 14 chps, is compatible with most modern software packages (including Wordstar), and is available with a parallel or serial interface. A forms tractor is offered as an optional extra.

Top of Silver-Reed's range of daisywheel printers is the new EXP770 with a printing speed of 31l chps and 2K printing buffer which can be increased to 48K according to requirements.

Silver-Reed (UK) (CW), Silver Seiko House, 19-23 Exchange Road, Watford, Herts. WD1 7EB. Tel: 0923 45976.

And micro shall speak unto micro

SOON, half of all microcomputers sold will be able to talk to other microcomputers. This is the prediction of Encotel Systems of Croydon.

To meet expected demand Encotel is to market a software package that allows company micro systems to exchange data with TeleVideo and other mim and micro systems.

Called TeleAsync, the package also provides the systems with the ability to act as dumb terminals for access to online public information services.

Designed to operate over standard telephone lines using low-cost asynchronous modems, TeleAsync features a high performance, cost effective file transfer capability that transmits data files such as electronic mail, word processing, spreadsheets and databases between two TeleVideo computer systems.

Encotel Systems (CW), 7 Imperial Way, Croydon Airport Industrial Estate, Croydon, Surrey CR0 4RR. Tel: 01-686 9687.

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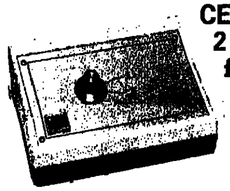

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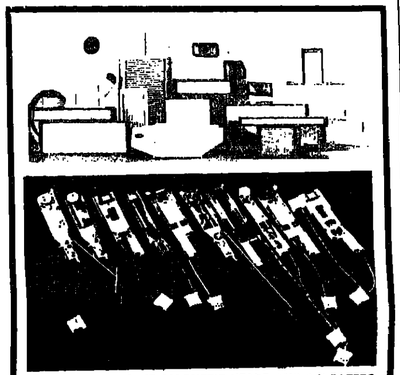

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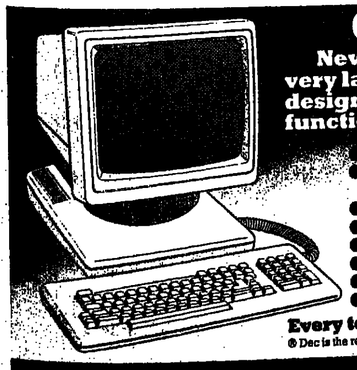

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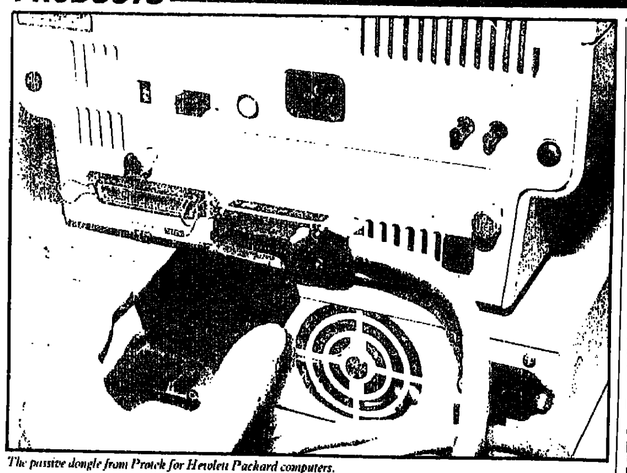


The passive dongle from Protek for Hewlett Packard computers.

Passive dongle developed in UK

A MAJOR problem for software producers is protecting programs from illegal copying. One solution is to use a dongle – a small black box about the size of a box of matches which plugs into the back of the computer and is completely transparent in use.

The software checks to see if the code is correct and if it is wrong or the dongle is not there, it will not run.

Until recently the only dongles available for Hewlett Packard computers were active ones, requiring an external power source, and cost about £200. A British company, Protek, has now developed a passive dongle which costs about £70, with discounts for quantity.

Two versions are available. The first has codes which are set during manufacture. In the second, the codes can be set by the software producer. To date, over 1,000 dongles have been manufactured, the majority being sold to the US.

The dongles measure 2in by 1½in by ½in, with the components embedded into black epoxy resin which has a high quality finish and a recess for the software manufacturer's label.

Protek (CW), 22 Sussex Street, London SW1. Tel: 01-834 3602.

Powerful desk-top micro from BCL

THE 3250 is the most powerful desk-top microcomputer in the BCL 3000 series of compatible multi-tasking, multi-user systems and its introduction widens the application areas for this series of business systems.

The 16-bit processor provides fast response times, the 5¼in Winchester drive gives instant access to large data files and the high performance streaming cartridge tape produces back-up copies from disc files in a few minutes with complete record security, says BCL.

The basic 3250 configuration has 256 Kbytes of memory, a 28 Mbyte 5¼in Winchester disc drive and ports for the connection of four terminals plus two dedicated printer ports. The system memory can be expanded up to one megabyte to support a maximum configuration of 11 visual display and printer terminals, according to user requirements, in full multi-tasking, multi-user operation.

The streaming cartridge tape unit has a capacity of 20 megabytes and provides a quick and easy way to make back-up copies of data stored on disc. Typical end-of-day security copy procedures take about eight minutes.

All this computer power fits into a desk-top unit 18 inches square.

The multi-tasking MP/MM-86 operating system of the 3250 permits the use of the wide selection of industry standard CP/M-based software packages plus the BCL multi-user commercial and vertical market application packages.

MP/M on the 3250 will support Basic, Cobol, Pascal and ACL.

The 3250 provides bisynchronous 2780/3780 communications facilities to both 3250 systems and other computers at remote locations. It also has the facility for asynchronous communications to remote visual display and printer terminals for local processing at branch and warehouse locations.

Business Computer Systems (CW), The Pagoda, 53 Theobald Street, Borehamwood, Herts WD6 4RT. Tel: 01-207 3344.

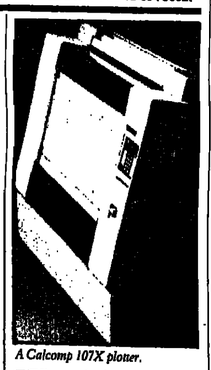
BCL 3250 multi-tasking desk-top 5¼in Winchester system.

Printing in seven colours

A U99 INK-JET printer has been launched by Tandy for use with its TRS-80 microcomputers. The CGP-220 prints in seven colours: black, red, green, yellow, blue, magenta and violet.

The speed is 2,600 dots a second for graphics printing, with a resolution of 640 dots per line. For text printing the CGP-220 runs at 37 characters a second. The characters are seven dots by five. Printing is virtually silent.

Tandy Corporation (CW), Tameway Tower, Bridge Street, Walsall, West Midlands WS1 1LA.



A Calcomp 107X plotter.

World first claim by plotter maker

WHAT it claims is the world's first range of true dual mode, AO drum/cut-sheet plotters has been introduced by Calcomp.

Known as the 107X Series, the range comprises a compatible family of three 16-bit microprocessor-based pen plotters.

Designed for such graphics applications as VLSI/PCB and electrical layouts, architectural and mechanical design drafting, process plant piping isometrics and resource and utility mapping, etc, all three models utilise Calcomp's combined drum plus cut-sheet design.

This provides switch-selectable operation as a conventional drum plotter, for unattached or batch plotting tasks, for example, or as a cut-sheet plotter for one-offs and plotting on to pre-printed forms in sizes anywhere up to ISO AO. All standards drafting media – paper, vellum, polyester film – can be accommodated in either mode.

Prices for the 107X Series start at about £14,000 including software, installation and full first year maintenance.

Calcomp (CW), Cory House, The Ring, Bracknell, Berks RG12 1ER. Tel: (0344) 50211.

3.2 Gbyte memory for the Vax range

DATACRUSHER VIII is the second of Darkcrest's range of plug-in mass storage expansion systems for the DEC Vax II 32-bit range.

A complete plug-in system, it incorporates Winchester disc technology, tape back-up and intelligent microprocessor-based controllers. The system incorporates from one to eight Fujitsu Eagle Winchesters, providing memory capacity up to 3.2 gigabytes.

Installation time is less than one hour, says Darkcrest.

The use of microprocessor controllers within the sub-system produces further benefits for the DEC user. The Datacrusher range releases the existing host processor from much of the peripheral I/O work by handling these functions within the controllers.

Head offset positioning, error control, bus timing, self test and multiple drive handling are some of the included features.

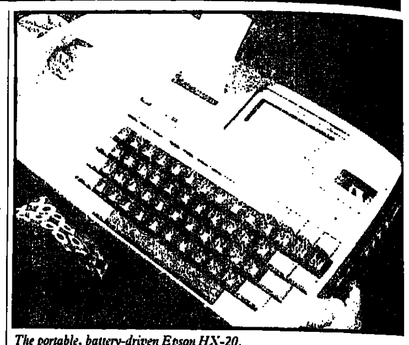
The reduction in Vax processor activity increases transfer rates, allowing the user to connect three times as many terminals to the system for a similar terminal response time.

The Datacrusher allows substantially more terminals to access data without upgrading the Vax II processor.

Datacrusher VIII is system integrated and supplied by Darkcrest; service and support can be provided by Darkcrest and on occasions by DEC Field Maintenance.

Entry level to the system, which supports a wide range of operating systems including Unix, VMS and Mumps, is £16,5000.

Darkcrest (CW), 70 Newcomen Street, London SE1. Tel: 01-403 5060.



The portable, battery-driven Epson HX-20.

Hand-held system for valuations

SYDNEY Development Co (UK) has been appointed official distributor for a commercial and residential property development and residual valuation package, developed by Robert Greenly of accountants Stafford Robert & Partners for Haslemere Properties.

The suite of programs operates on a hand-held, battery-driven Epson HX-20 computer, incorporating a display screen, full typewriter keyboard and an internal printer. The advantage to institutional fund managers and senior estate agents dealing with valuation and development appraisal work is that they can use their own machine away from the office, without a trained operator.

A development appraisal computer program deals with commercial and residential property, both freehold and leasehold, and accommodates proposals with up to three types of commercial user and residential proposals with up to 20 types of different units. Integrated programs deal with equated yields (seven tranches).

The residual valuation program can determine either the profit on a development from a given site cost, or the site value from a predetermined profit percentage. A revision routine is included in the program to allow any or all of the variable inputs to be altered and the process can be continued until the optimum solution has been achieved.

An agricultural investment appraisal program computes investment yields from acreage and rental inputs. The printer tabulates a spread of twelve capital prices per acre, in £25/acre steps above and below a given value, with figures for effective acreage, total cost, initial and review yields.

The basic package, including programs and the Epson portable computer, is priced at £875. An Epson external printer and connecting cable costs an additional £535.

Sydney Development Co (UK), 13 Wilton Place, London SW1X 8RL. Tel: 01-235 2939.

Cifer puts Unix in a box

A NEW range of "boxed micros", the Series 9000, is announced by Cifer. Aimed at the OEM market, it uses Cifer 800 series logic boards, and can be configured internally to support Unix and CP/M Plus.

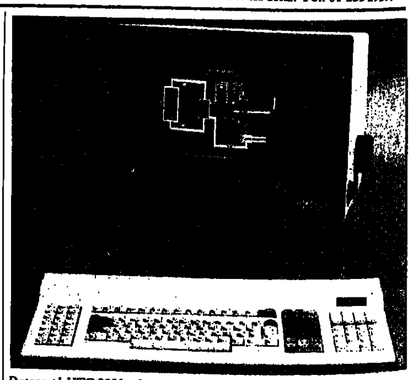
The Series 9000 has been designed specifically as a hard disc machine. Unlike most professional microcomputers available there is no two-floppy disc version of the machine, and the casing is designed with the Winchester disc sited at one end, away from the operator.

The vertical micro design concept has been chosen to minimise desk footprint and to aid convective cooling. The narrow profile of the micro means it can easily be accommodated behind the operator's terminal or alternatively can be wall-mounted.

The basic product in the Series 9000 range serves as an add-on accessory for existing Cifer micros and disc-based intelligent terminals. Fitted with a MC68000 processor, from 256 Kbytes to 1 Mbyte of RAM, Unix, and either a five or 10 Mbyte Winchester disc, the machine plugs into any existing eight-bit Cifer micro to give single-user Unix.

The second product in the range has a CP/M-Plus, eight-bit system which utilises a Z80A processor and 128 Kbytes of RAM. Mass storage is by the built-in five or 10 Mbyte Winchester with an 800 Kbyte floppy drive for program and data transfer and Winchester back-up.

Cifer (CW), Avro Way, Bower Hill, Melksham, Wilts SN12 6TP. Tel: (0225) 706361.



Datagraph VTC 8001 colour graphics terminal.

Colour graphics launch

THE Datagraph VTC 8001 is a new graphics terminal from Dicoll Electronics. VT100 text compatible, it also emulates Tektronix 4012 graphics. It is designed primarily for business graphics and CAD/CAM applications.

Features of the Datagraph 8000 series include a 16-bit TMS 9995 microprocessor a 14in high resolution colour monitor, high resolution display ranging from 512x256 to 640x480 pixels, up to 256 colours, refresh 60 Hz non-interlaced, two programmable cursors, and a graphic operating system for circles, ellipses, vectors, dots and rectangles.

Dicoll Electronics (CW) Bond Close, Kingsland Estate, Basingstoke, Hants., RG24 0QB. Telephone: Basingstoke 61551.

Financial memory tripled

NCR has tripled the memory on its 2262 financial terminal.

A new model of the 2262 has been introduced with 128K of memory, compared with 64K on the original model. In addition a new expansion kit enables the user to grow to 192K.

The 2262 is programmed in Basic to the user's exact needs. This means banks and other organisations handling financial transactions can automate their procedures quickly.

The 2262 has 44 keys, each of which can be programmed to handle different functions.

NCR (CW), 206 Marylebone Road, London NW1 6LY. Tel: 01-388 8244.

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The Computer Trade Conference is aimed at the serious computer trader. Manufacturers, suppliers and third party vendors will exchange ideas on the marketing and selling of computer products. Acknowledged specialists will present their ideas on the best ways to tackle third party sales.

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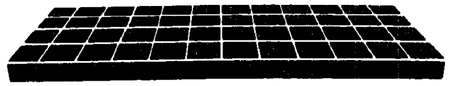
The Computer Trade Conference '84



Wembley Conference Centre
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TUESDAY, MARCH 13TH
RETAILING

8.30 COFFEE AND REGISTRATION
9.15 Mass Retailing of Business Micros — Michael Milman, managing director, Greens Business Systems (a subsidiary of Debenhams Ltd.)
9.55 How dealers should present themselves — Chuck Hansen, managing director, Computerland.
10.35 COFFEE
10.55 What Apple expects from their dealers; what Apple gives their dealers in return — Keith Hall, sales and marketing director, Apple Computers (UK).
11.55 Retailing through education and training — G. Summers, managing director, Planning Consultancy Ltd.
12.25 LUNCH

MARKETING TO THE PROFESSIONAL AND CORPORATE MARKET

2.00 Choosing Your Products — Jack Schofield, editor, Practical Computing.
2.40 Market products and sales channels — key considerations in the building of the dealer programme — John Crawford, vice president, world wide dealer programmes, Data General Corporation.
3.20 Personal computer dealer marketing in 1984 — Nigel Henzell-Thomas, personal computer dealer manager, IBM Ltd.
3.45 DEC's approach to the marketplace — Mike Harding, marketing specialist, Digital Equipment.
4.10 How to approach the corporate customer — Hal Hovland, joint managing director, Hovland Business Systems.
4.50 CLOSE.

WEDNESDAY, MARCH 14TH
SOFTWARE

8.30 COFFEE AND REGISTRATION
9.15 Vertical market software — coverage of vertical markets by specific packages varies greatly — some sectors are over-supplied and there are many open opportunities — Russ Nathan, managing director, Romtec.
9.55 Procurement — How you evaluate software from various sources — David Turley, director information systems division, Tamsys.
10.05 COFFEE
10.55 Marketing Software — The Business Market — Barry Neil, sales manager, Micro Computer Products International Ltd.
The Games Market — Nick Alexander, managing director, Virgin Games.
11.35 Systems and applications software developments — David Fraser, general manager, Microsoft Ltd.
12.15 LUNCH – Guest speaker – John McNulty, McNulty's Interchange.

SYSTEMS INTEGRATORS AND OEMs

2.00 Communication is the key to office automation — Malcolm Reip, OEM marketing manager, Computer and Systems Engineering PLC.
2.40 Discs and Peripherals — Bob Britten, sales and operations manager, Kennedy International Inc.
3.20 Printer products and the markets — Alan Clemmetsen, consultant, Mannesmann Tally.
4.00 Market trends in VDUs and VDU terminals — Harvey Ulijohn, managing director, Lear Siegler Data Products Ltd.
4.40 CLOSE.

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PRODUCTS

Designed to fit on an engineer's desk top

APPLICON is launching additions to its Bravo! system. The first of these is Applicon's new 4620 desktop colour raster-scan workstation which is a colour graphics terminal, keyboard and tablet designed to fit on an engineer's desk.

The desktop workstation is priced at $21,000 and provides a range of graphics functionality for Applicon's CAD/CAM application software.

The workstation which occupies a 30inch × 21inch work surface, features a tilt and swivel monitor to suit operator preferences. In addition, the keyboard and tablet are combined into a single unit which fits in front of the terminal.

The new workstation offers complete graphics capabilities: the terminal has a 13-inch screen featuring eight colours, four graphics planes, and hardware-generated alphanumerics.

The desktop unit is plug-compatible with Applicon's Series 4000 VAX-11/730 and 11/751 graphics processing facilities and supports all of the new Bravo! 32 bit systems and application software. It can also be used with DEC VAX-11/790s. Customers can mix and match workstations on the same system, says the firm.

The 4620 desktop colour raster-scan workstation from Applicon.

The 4620 uses Intel's 80186 16-bit microprocessor and includes 256K of program memory, expandable to 766K, as well as optional dual 1-Mb 5-1/4inch slimline floppy discs for off-line storage. It features 50Hz noninterlaced resolution in 672 × 504 format and includes power-up resident diagnostics.

Applicon United Kingdom (CW), Regent House, Heaton Lane, Stockport SK4 1DA. Tel: 061-429 7227.

Wilcox micro suits builders

BUILDING contractors are the target for a new micro system from Wilcox Computers. The Wilcox 2000 is a new switchable eight or 16-bit micro with three software packages designed for estimating, costing and sub-contracting applications.

The company has only a 2% market share of computer systems in this industry, gained with its earlier systems, but company chairman Robert Shove said that an independant survey of the market by PA Consultants indicated that the system 2000 "had a bright future ahead".

The building industry has just come through a severe recession, said director Dennis Wrigley. "As a result, the margin for error in estimating is extremely small and the need for a computer system which can keep track of estimates and stocks is more obvious."

He said that the main problem with selling Computers into this industry is ignorance on the part of company managers.

To help overcome the problem of management ignorance, Wilcox offer unlimited training and hand holding until users are familiar with the system. "A lot of thought has gone into making the software easy to use," added Shove.

The micro is a departure from those previously offered by the company, in that it uses industry standard components, including Z80 A and 8088 processors and the CP/M operating system, in place of in-house developments.

Internal management of the system is handled by a separate eight-bit 6502 CPU which also controls the 15-inch screen display.

Internal storage is 512 Kbytes which can be supplemented by either two 320 K5¼inch floppy disc drives or up to 10 MBytes on Winchester disc. Hard copy is available through NDR or Epson printers.

The software is written in CIS Cobol though Shove said that the system would support any high level language.

Wilcox Computers (CW), Rackery Lane, Llay, Wrexham, Clwyd LL12 0PB. Tel: (0978-83) 4866.

PRODUCTS

Daisywheel designed for the quiet office

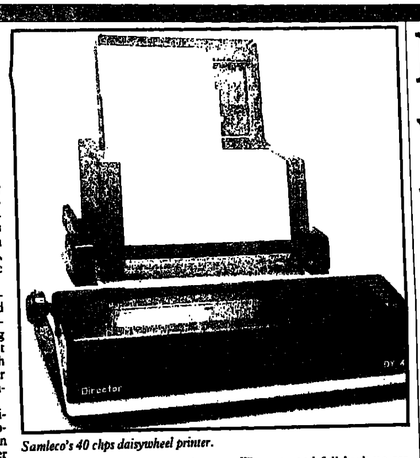
A 40 character-per-second daisy wheel printer, launched by Samleco Computer Services, the Director DY-40, brings together, says the manufacturer, a combination of durability, latest technology, performance and price to meet the demands for quality printers.

Significant features incorporated in the DY-40 as standard include Qume and Diablo compatibility, bi-directional printing with software selectable print pitch, built-in buffer for high throughput, choice of serial or parallel interfaces and programmable ribbon colour selection.

Paper handling provides a bi-directional feed system with automatic left and right margin alignment independent of paper width. Special noise absorption is also incorporated to ensure 62DbA levels for the "quiet office".

The Director DY-40 has a modular construction which allows for ease of maintenance and the unit has a built-in self diagnostic.

MCBF of the printer is 50 million characters and machined castings support the print mechanism to prevent malfunctioning due to distortion.



Samleco's 40 chps daisywheel printer.

The "easy load" printwheel has 96 characters as standard, a range of languages, different type styles and fully programmable line spacing.

Warranty and full back-up service is provided with special on-site arrangements tailored for specific needs.

Samleco Computer Services (CW), SCS House, 9 Fairacres Industrial Estate, Dedworth Road, Windsor, Berks SL4 4LE. Tel: (07535) 54717.

Debut of the well-trained workstation

XIONICS' Keystroke Procedure Language, KPL, for use with MasterNode and MicroNode office automation networks, aims to enable users to "train" their Xionics multi-function workstations to take a lot of routine work off their hands.

Keystroke memory facilities are not new. Word processor glossaries allow frequently-used key sequences (standard paragraphs) to be recorded, named, and called up at will. KPL takes this basic idea further.

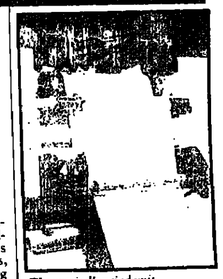
The first advance is that KPL separates the facility from any particular application and makes it usable for all the applications available at the workstation. It can be used for word processing, electronic mail, personal computing, viewdata access, mainframe and mini interaction, and any combination of these.

The next series of advances enables procedures to operate "intelligently". KPL provides facilities for remembering words, sentences, rows of numbers, and for using these later in the procedure. It also permits these to be compared – with information on the screen, or with other specified data – so that the procedure can vary its actions in the same way as the user would.

Finally, the ability to be conscious of dates and times is built in. KPL procedures can examine and compare dates and times. They can vary their actions, or cause other procedures to be carried out depending on what they find.

KPL is available, at no charge, for use with Xionics 256K workstations.

Xionics (CW), Dumbarton House, 48 Oxford Street, London W1N 9LA. Tel: 01-580 5522.

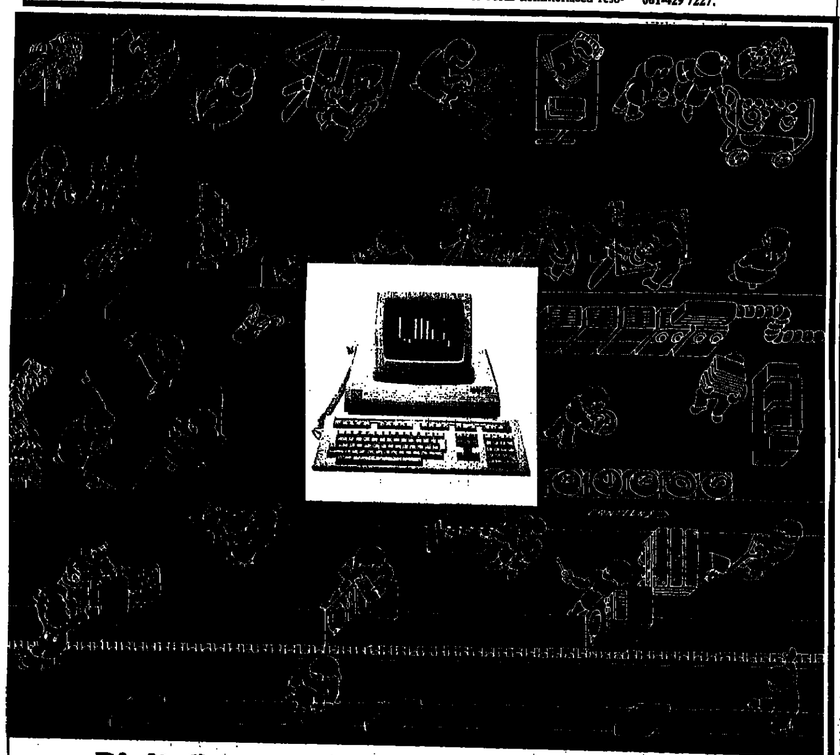


The unwind/rewind unit.

Perforating system

A COMBINED unwind/rewind unit with a programmable perforator which can be programmed to "miss and change" positions has been introduced by Hurley Moate. This system of perforating is regarded as suitable for cheque books. It can also be used for any other form of continuous stationery where perforation positions vary.

Hurley Moate (CW), 23 Backwallgate, Macclesfield, Cheshire. Tel: (0625) 616155.



Digital's sensational new VT240™ terminal. Just look what it will be replacing.

To date, graphics applications have demanded either expensive work-stations or a variety of upgrades for your VT100 or VT100 look-alike.

Now, with the sensational new VT240 text and graphics terminal, you can specify a single low-cost product to meet practically all your needs. The added bonus, of course, is Digital's quality engineering and field support.

The VT240 features 800 x 200 pixel resolution and two graphics planes to achieve four grey levels (colour is available on the new VT241).

Firmware is used to execute ReGIS commands and Tektronix™ 4010/4014 protocols, while generating full bit map graphics. Hence the VT240 will support a broad range of software including Tektronix Plot-10™, DECgraph, DECslide, ISSCO etc.

At MBS, we're stocking the entire VT200 range for fast off-the-shelf delivery. As Digital's most successful terminals distributor, we'll spare no effort to help you get the very best from those superb new products.

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Tektronix and Plot-10 are trademarks of Tektronix Inc.

Zilog's new 11 Plus system is worth examination.

11 Plus passes tests

ZILOG (UK) recently unveiled its new System 8000 Model 11 Plus.

Zilog's Unix-based System 8000 range starts with the Model 11 (£11,500) which serves eight users, has up to one Mbyte of memory and two Winchester disc drives each giving 19 Mbytes of storage.

The new 11 Plus (£14,600) maintains all these features and gives increased disc drive capacity. Users can now start with a 33 Mbyte disc and increase to 52 Mbyte or 66 Mbytes with the additional disc.

Zilog says that the 11 Plus is aimed at those users who already need 33 Mbytes capacity, yet cannot justify the cost of the Model 21 which gives up to 128 Mbytes.

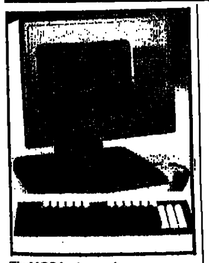
The new 33 Mbyte disc drive on the 11 Plus utilises a voice coil actuator which reduces disc access time from 90 Msec to 30 Msec, making the 11 Plus the fastest multi-user Unix system on the market.

Zilog (UK) (CW), Zilog House, Moorbridge Road, Maidenhead, Berkshire SL6 8PL. Tel: (0628) 39200.

GEC Information Systems (GECIS) is now revealing full details of its telstex system – Centex – to be marketed in the UK by its sales organisation Reliance Systems.

Centex gives low user costs, keeps communication separated from text preparation and reading; allows use of existing user terminals; provides a desk to desk capability, reducing overall message delays and costs; and gives flexibility of facilities available to particular users.

Reliance Systems (CW), Turnells Mill Lane, Wellingborough, Northants NN8 2RB.



The MOS business micro.

MOS micro arrives in the UK

THE MOS micro is a new business computer, designed and produced by MOS International. The system has been on sale in Australia, Africa and Europe for the past year and is now available in the UK through TKT Computers.

The processor is the industry standard Z80A with a 4 MHz cycle speed supported by 64 Kbytes of memory and an 8K ROM. The standalone workstation can be fitted, either at the MOS factory or on site, with a further 64 Kbytes of memory plus the master station upgrade board and processor to control a network of up to seven further intelligent workstations.

TKT Computers (CW), Road End Road, Oldbury, Warley, West Midlands.

Low-cost graphics launch

A LOW-COST Qume terminal, combining full graphics capabilities with normal business computing features, is being introduced by ISG Data Sales.

Using single commands, the QVT 211 GX will draw arcs, circles, lines and boxes as well as provide emulation for the Lear Siegler ADM 3A/5, the Televideo 910, 912, 920 and 925 and the Hazeltine 1500.

The QVT 211 features a separate and independent graphics memory which can be displayed simultaneously with its alphanumeric memory on a thin, adjustable, non-glare, green or amber screen.

Compatible with the Tektronic 4010 and 4014 command sets, the unit is suitable, says ISG, as a preview terminal for CAD/CAM and Tektronix Plot-10 applications.

User programming of image size and location plus additional features such as variable display windows, relocatable origin and area fill is simplified in the QVT's own built-in graphics mode.

Other features of the QVT 211 include a menu set up mode instead of dip switches; a 7×9 character format; 12 function keys; and a 25th status line.

ISG Data Sales (CW), Wellington Industrial Estate, Basingstoke Road, Spencers Wood, Reading, RG7 1AW. Tel.: (0734) 884666.

The Micro-Dolphin microcomputer system.

Dolphin leads the field

A NEW range of multi-user MPM-based microcomputer systems called Micro-Dolphin, manufactured in the Netherlands by Stock Control International came out ahead of all the competition in a recent independent benchmark test.

The speed of the eight-bit Micro-Dolphin results from using a five megaHertz clock, 16-bit addressing and the elimination of wait states even during input and output.

Stock Control International (CW), 42 Upper Richmond Road West, London SW14. Tel: 01-876 0102.

Cunard International Hotel, London
January 31 – February 2, 1984
10.00 – 17.30 (closing 16.00 on the last day)

Especially for the computer professional

Peripherals '84 is the central event in the computer peripherals industry's calendar, because it offers the specialist visitor like you, an opportunity to see the very latest equipment on offer from the manufacturers.

Only at a show dedicated to peripheral equipment including terminals, printers, disk drives and plotters, could you see the wide range of cost effective equipment available today to the professional computer buyer.

The show's professionalism is guaranteed by the joint sponsorship of the industry's own trade magazine, Systems International, and the Peripherals Suppliers Association. A simultaneous programme of seminars is held by the Peripherals Suppliers Association in recognition of the central place this prestigious exhibition holds in the peripheral industry. For full information of the seminar programme telephone Mrs Helen Gibbons on 0763 71209.

Both the show and the seminars are held at the Cunard International Hotel, Hammersmith, itself close to the centre of London and within easy reach of Heathrow Airport. Peripherals '84 is organised by Reed Exhibitions which also stages other major computer related exhibitions including Compec, Software and The Computer Trade Show.

So if you're looking at the peripheral market make sure you visit Peripherals '84 and discuss your needs with specialist suppliers. It's the central event for peripherals

Return coupon to The Exhibition Manager, Peripherals '84, Reed Exhibitions, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ
Please send _____ visitor registration forms Please send more information on Peripherals '84 Seminars ☐

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PERIPHERALS 84

120,139 ABC JULY-DEC 1983.
129,335 SINGLE ISSUE AUDIT NOV 10th 1983.

PUBLICATION	CIRCULATION	SOURCE
Computer News	100,000	Computer News
Computer Weekly	~~97,226~~	ABC 1982 (last published) figure
Computing	110,920 124,635	ABC (June) Dec '83 Spot Check 15th Dec '83

JULY.

What a source!

You know what they say.
About there being lies, damned lies and statistics?

Well fortunately, there are ABC figures as well. And they are in black and white for anyone to check on. (At least, they are for all the publications that matter.)

So remember, although there are quite a few publications that claim to reach computer professionals, it pays to check their sources.

computing
The industry's most widely read weekly.

Yes. What a sauce!

We hope this advertisement will set the record straight, once and for all.

Computer Weekly's ABC figure for July-December 1983 is 120,139 while Computing's ABC figure, over the same six month period, and not June-December as they have mistakenly quoted, is only 110,920.

What makes us even more confident that our figures are more accurate is the fact that each Computer Weekly reader is verified every 12 months, unlike our competitors who wait 3 years.

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So, to summarise, Computer Weekly has always been the best read journal in the business for reaching key job-hunters and purchasing decision makers at all levels.

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ComputerWeekly

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Steve Lever
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General copy deadline
3.30 pm Monday prior to Thursday publication

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Colour deadline
4 p.m. Friday prior to Thursday publication

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Demand in the States for the best of British computer expertise exceeds supply–but there are snags. Without the help of a well-managed operation over there, your chances of a trouble-free transition are slender to say the least.

From our office in Massachusetts, we ensure that all successful applicants recruited through Computer Search and Selection are looked after–like friends.

We need thoroughly experienced people, ideally, but not necessarily qualified to degree level to work on a wide range of career enhancing projects.

NEW ENGLAND STATES
Connecticut, New Hampshire, Maine, Massachusetts, Rhode Island, Vermont.

Software Development Manager
Large Systems–IBM, CDC, Honeywell, Univac, etc. Database experience. Manufacturing applications (Ref. US/10)

Software Development Specialist
HP 3000 IMAGE, IBM Database Manufacturing applications. Applications conversion–IBM, CDC, DEC etc. (Ref. US/11)

Business Systems Analysts, Systems Advisors and Project Leaders
With 3-5 years' experience. Degree level qualifications. Essential that candidates should have achieved a record of excellence and be at the forefront of development of systems in Insurance, Banking, Money Markets, Manufacturing, Retailing and Distribution (Ref. US/12)

Analyst Programmers
IBM experience in IMS, DRAD, CICS, DMS, MVS, TSO/SPF, CICS, DL/1, COBOL, RPG II, ADF, ADABAS etc. (Ref. US/13)

Our permanent salaries range from £9,000 pa to £50,000 pa plus company benefits.

Contractor's remuneration will be in the range £600–£1000 per week and can be tailored to suit individual requirements. This may include a car, accommodation and family air fare. There are significant tax advantages and medical health insurance is standard.

Analyst Programmers and Programmers
With minimum 2-5 years' experience in an IBM COBOL environment. Plusses would be IMS, CICS, or IDMS (Ref. US/14)

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Analyst Programmers and Programmers
With 3-5 years' experience + minimum 1 year's experience of IBM System 38 (Ref. US/16)

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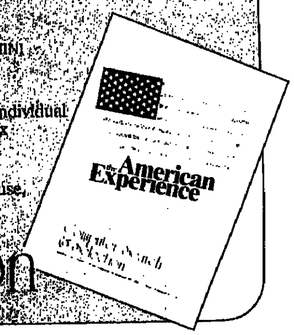
With 0-2 years' experience. With one year's CICS or IMS (Ref. US/17)

Programmers
UNIGRAPHICS (US/18)

Programmers/Designers
Mechanical Engineering background with any MINI experience using FORTRAN (Ref. US/19)

Please telephone **Joan Loveley** for further information and our free information pack, on Hemel Hempstead (0442) 40761, or write to her at Computer Search & Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts, HP1 1BB.



Computer Search & Selection

COMPUTER PROGRAMMER

Thorntons, the well known quality confectionery manufacturers are looking for an experienced programmer.

Candidates (male or female) should have considerable programming experience using COBOL, and familiarity with Hewlett Packard 3000 hardware would be an advantage.

We offer an attractive salary, excellent working conditions and a full range of facilities.

Please telephone or write for an application form to Executive Manager-Personnel, J. W. Thornton Limited, Derwent Street, Belper, Derby DE5 1WP.
Tel: Belper (077 382) 4181.

Thorntons (7356)

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Unique opportunity with UK subsidiary of growing Multi-National dealing with an exciting range of software.

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JOINT MATRICULATION BOARD
Manchester

SENIOR PROGRAMMER/ PROGRAMMER

Applications are invited from programmers with a minimum of three years' experience in COBOL for appointment to the full-time staff of the JMB. The work will involve the preparation of programs for the processing of GCE A-level and O-level examinations. A knowledge of IBM Assembler would be an advantage. For appointment at the senior level, experience in excess of the minimum of three years will be required and must include at least two years' experience of CICS and VM/CMS. The Board has an IBM 4331/11 operating under DOS/VSE and VM/CMS. The salary scale for a Senior Programmer rises by six points to a maximum of £11,615; the Programmer scale rises by nine points to a maximum of £8,975.

Further information and application forms from the Secretary (Staff W), Joint Matriculation Board, Manchester M15 6EU. (Tel: 061 273 2565).

(7491)

Technical Support

up to
£12,500
plus bonus plus relocation

NORTH WEST

Major developments have given rise to three significant opportunities for skilled professionals to further their careers with innovative companies.

Communications Specialist

Voice, Data, PABX, FAX, Digital Technology, SNA, DSA. If you have experience in any of these areas and a desire to work toward an integrated environment, this is an excellent opportunity to work at the forefront of Technology.

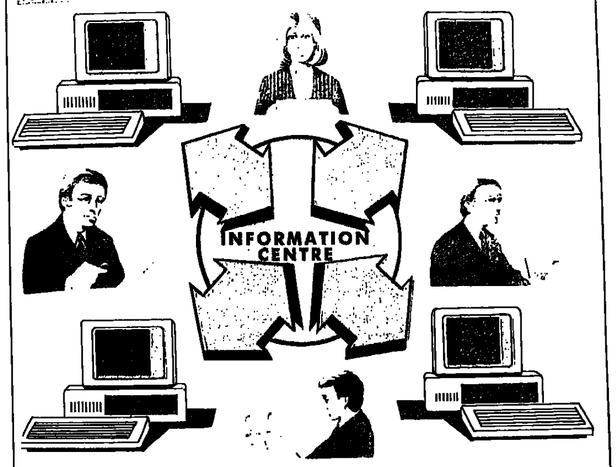
HONEYWELL DPS 6 Support

Experience of Level 6 Hardware and Software in a communications environment, coupled with good ASSEMBLER skills is essential. Additionally an exposure to TPS, DSS and COBOL would result in the ideal profile.

DEC PDP11 Analyst Programmer

A new process control warehousing development utilising DEC Technology, requires a young professional to join the team. You must have RSX-11 and MACRO-11, with COBOL and FORTRAN being an added advantage.

WORKING WITH PROFESSIONALS



The Information Centre concept grew from a need to provide users with a method for developing their own applications within a controlled environment utilising information and personal computing systems compatible with existing IBM architecture. We have established this concept, as ideas for new systems dedicated to specific applications can often be identified by professionals with practical experience of the job. In many cases however the relative simplicity of developing such applications does not merit the full project cycle. Instead the users can access the Information Centre for consultancy support and guidance on software tools along with educational and training support.

To ensure effective utilisation of the Information Centre we are building a team of specialists to link user requirements to the Information Systems Department. We now require an **Information Centre Specialist** to augment the team.

INFORMATION CENTRE SPECIALIST
To £14,000

Arthur Young McClelland Moores & Co. provide clients with a full range of accountancy services including consultancy. The firm has over 160 partners and more than 2,200 professional staff operating from 21 offices located throughout the country.

We are seeking candidates with five years experience of applications development and some knowledge of micros to fill the role of Information Centre Specialist.

Responsibilities will consist of providing a high level of expertise in all aspects of personal computers. This can include evaluation and selection of appropriate hardware and software tools and products, assessing the suitability of a product for a particular application, and providing consultancy and an application design service. Additionally the specialist will be required to develop and implement training courses and demonstrate applications for users and clients.

You should have five years' systems and programming preferably in an IBM 4341 environment and some applications experience on 16 bit micros, using BASIC and MSDOS or PCDOS operating systems. Excellent presentation skills are necessary along with the ability to relate the Centre's services to all users. Knowledge of IBM's software tools such as DOSF, DISOSS, GDDM or APL products such as ADRS, PGF would be an advantage.

Location: London

For further details including company information please ring Francesca Drinkwater or return the coupon below.

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A MEMBER OF AMSA IN EUROPE AND ARTHUR YOUNG INTERNATIONAL

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£ Negotiable

The person we are seeking will have a recruitment agency background or will currently be working within data-processing and possess the desire to develop their career within a highly rewarding industry. Most important will be the ability to communicate effectively at all levels in a stimulating but demanding environment.

CONTRACT CONSULTANT
£ Negotiable

To keep pace with client demand for contract staff. We now require an experienced contract consultant to take a leading role in establishing this new division. Considerable scope exists for the successful applicant to build their career in line with this divisions' growth and success.

LOCATION: WEST LONDON

For an initial discussion in strictest confidence please contact Peter Kennewell on 01-567 5501 or write enclosing a full C.V.

D.P. Recruitment SERVICES LIMITED

SENIOR APPOINTMENTS – £14K +

SALES SUPPORT CONSULTANTS

£14-16K + CAR + SUBSTANTIAL BONUS **HERTS BASE**

Our client is one of the world's leading manufacturers of computing, telecommunications and office automation equipment. Operating directly in most European countries the company develops commercially orientated systems using hardware, software and networking resources appropriate to requirements.

As a result of expansion, and in preparation for the launch of a major new product set, we are now seeking to recruit additional pre-sales support consultants who will be based in Hertfordshire and provide support throughout the United Kingdom. Suitable applicants could come from a wide variety of backgrounds where analysis and project management skills are used but should have experience in **one** of the following areas:-

- **Office Automation, LAN's, WAN's etc.**
- **Commercial D.P. systems**
- **Turnkey systems based on minicomputers.**

The role, an unusually diverse one involving pre-sales systems analysis in order to understand customer requirements and formulate viable hardware/software solutions, also includes organising and participating in exhibitions and seminars, the preparation of major proposals, and project managing the initial phases of systems installation.

Ideal applicants will be those who can combine commercial experience and personal skills with a good level of technical competence. In return the company offers genuine career development opportunities (technical, project management, man management, sales, marketing etc), an excellent salary package and all the benefits associated with large companies such as BUPA and a generous relocation package.

For details of this outstanding opportunity telephone Kevin McCourt (0734) 595346 at our Reading office. Interviews will be held at several locations throughout the South of England.

MCL **McCOURT COUSINS LTD.**
Computer Recruitment Consultancy

27-29 Greyfriars Road, Reading, Berkshire
Telephone (0734) 595346 (24 hours)

Chesham House, 150 Regent Street, London W1R 5FA
Telephone 01-439 6288

Computer Manager
£13,000-£14,000 p.a.
South East England

Our client, a subsidiary of a major multi-national organisation, is a light engineering company operating in the medical services industry. The Company has its Head Office and main manufacturing site in the South East and outlets throughout the British Isles.

An experienced professional is now needed to take control of the Company's computer department, where an ICL System 10/220 is currently used for accounting and stock control. The challenge lies in the scope provided to update the present hardware, expand the applications into several new areas including production control, and also take responsibility for the private viewdata system that is currently being established.

To match our client's expectations you should have been involved, at a senior level, in both hardware and software applications developments in relation to ICL systems. Ability to program in Assembler and RPGII is also essential.

The salary is negotiable and will be enhanced by all the usual big company benefits, including relocation allowances if applicable.

Please write, enclosing a full c.v. to: Confidential Reply Service, Ref. BMC 8917, Austin Knight Advertising Limited, London W1A 1DS.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

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BRITISH AEROSPACE

Senior Systems Analysts & Senior Programmers

As the result of continuing activities, a number of Senior Systems Analysts and Senior Programmers are required for the well established and successful data-processing organisation of the Samlesbury site of the Warton Division of British Aerospace Aircraft Group.

Successful candidates will join a team which is developing and supporting a variety of spares and order processing systems in an IBM machine environment operating under MVS, with SNA, providing access to a number of 3081 and 4341 mainframes. COBOL is the main programming language, with IMS DB/DC and CICS/DL1 both being used to develop on-line and real-time applications.

Our specific requirements are for:

Senior Systems Analysts educated to at least HND/Degree level and with significant experience in a commercial analysis environment. Experience in the development and implementation of at least one major commercial system is required.

Senior Programmers educated to at least HND/Degree level and with significant COBOL programming experience, ideally in an IBM environment. Good working knowledge of IMS or CICS/DL1, while not essential, would be a strong advantage.

Samlesbury is the control and operating centre for the Warton Division's spares organisation, servicing customers throughout the world, and also has major production responsibilities. The site is in a pleasant rural area of Lancashire, between Blackburn and Preston and within easy access to motorway links and rail services.

Please write with full career details to:

Mr. A. Cain,
Senior Personnel Officer,
British Aerospace, Aircraft Group,
Warton Division, Samlesbury Aerodrome,
Balderstone, Blackburn,
Lancs. BB2 7LF.

(7457)

BRITISH AEROSPACE AIRCRAFT GROUP Warton Division

HOWARD
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S/W Technical Authors, short + long assignments	Various Locations
Network Specialists + Instructors	Various Locations
S/W Engineer, process-control (chemical plant)	Holland
Systems Programmers, MVS+ JES3/MVS+ IMS	Germany
Systems Analyst databases, networks, etc IBM H/W	Belgium

Please contact in the first instance: Gertie Petit on 01-952 8092 (office hours) or 01-868 0355 between 6-9 pm.
Employment Business Section

Howard Organisation International Limited, Russell House, 140 High Street, Edgware, Middlesex HA8 7BS

SENIOR APPOINTMENTS – £14K +

I.T. Office Automation-London

When Henry Ford introduced his famous Model T, he also introduced an equally famous maxim; 'you can have any colour as long as it's black.' A maxim which when translated into modern day terms and transported into an office environment perfectly illustrates the single-supplier inflexibility of some office automation companies — but not Xionics.

Founded in 1978, Xionics has taken the lead in the concept of open interconnection in office automation systems, with the result that within a mere six years we've become a real force within the industry, winning many prestigious government and commercial contracts.

So where do you fit into this pattern of growth and expansion? The answer is simple, it is precisely because of this growth and expansion that we can now offer you the following opportunities.

Senior Software Designer/Programmers
£12–16,500

Software Designer/Programmers
£7,500–12,500

We are looking for some highly talented systems people to fulfill these vital roles within our Development Division. People not afraid to make a positive contribution to the design and development of Xionics' unique concept in the area of open systems interconnection, information architecture development and multiprocessor systems.

We are looking for people with good ideas and good experience in the programming of microprocessors, while a knowledge of LANS, word processing software, communications or graphics would also be highly desirable.

Systems Support Consultants
£10–15,000

Working within our Customer Service Division and backed up both by an established field Service organisation and an expert Development Division, you will be tracking down problems in complex systems and providing a quick response service to customers who rely heavily on systems availability.

This will call not only for a dynamic comprehension of the subject but also an overall technological ingenuity gleaned from your experience in software/systems design.

Distributor Support Executives
£18–25,000 package + car

These two tough, demanding and essentially rewarding opportunities will require you, from a base in Central London, to travel all over the U.K. dealing with our existing distributors and identifying and appointing new ones.

Reporting directly to the Line Network Manager, you should have had experience of dealing with distributors or OEM customers within the computer or an allied industry. You should be technically competent on the subjects of data communications, word processing and data processing and possess an all round business acumen preferably accrued from a good marketing background.

Application Support Consultants
£8–15,000

We are looking for people to work within our Marketing Division as members of our small, expert team of Application Support Consultants. This is an exciting opportunity. With good experience, you will assist customers and distributors in identifying, planning and implementing applications based on the company's products

In addition you will also be expected to participate in other Marketing Division activities such as presentations, demonstrations, product planning investigations and the preparation of sales literature.

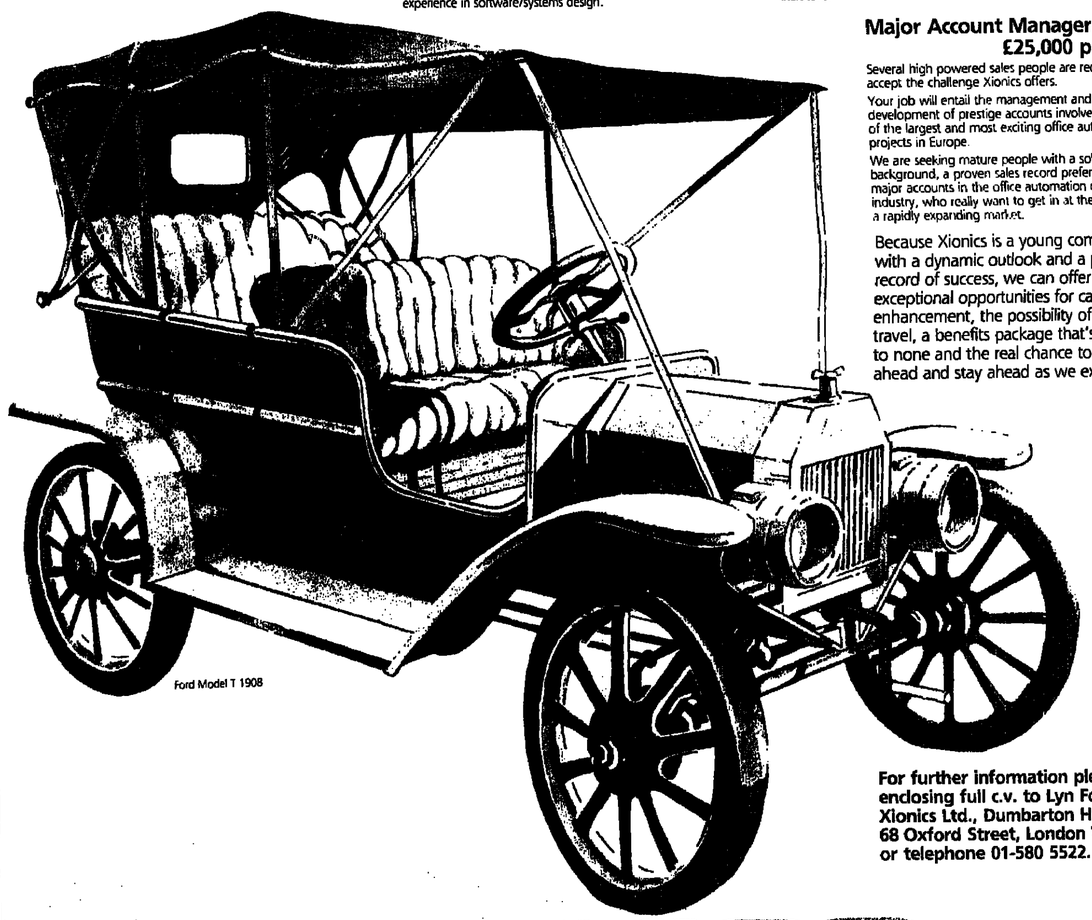
Major Account Managers
£25,000 package

Several high powered sales people are required to accept the challenge Xionics offers.

Your job will entail the management and development of prestige accounts involved in some of the largest and most exciting office automation projects in Europe.

We are seeking mature people with a solid technical background, a proven sales record preferably on major accounts in the office automation or an allied industry, who really want to get in at the forefront of a rapidly expanding market.

Because Xionics is a young company with a dynamic outlook and a proven record of success, we can offer you exceptional opportunities for career enhancement, the possibility of overseas travel, a benefits package that's second to none and the real chance to get ahead and stay ahead as we expand.



Ford Model T 1908

For further information please write enclosing full c.v. to Lyn Fox, Xionics Ltd., Dumbarton House, 68 Oxford Street, London W1N 9LA or telephone 01-580 5522.

XIONICS
AN INTEGRATED OPPORTUNITIES EMPLOYER

MVS/XA Implementation

Holland — c. £2700/month

We are seeking two experienced MVS Systems Programmers to undertake an initial 9-month assignment in Holland assisting with the expansion of an international DP network involving installation of twin 3081's and implementation of MVS/XA with JES2. Working as members of a small MVS team in an unusually pleasant environment duties will include both XA implementation and support of the existing MVS/SP 1.3/JES2 based systems. Previous XA experience whilst useful is not essential but applicants must be able to work with the minimum of supervision.

B069

DASD Package Evaluation

London — c. £2500/month

We are seeking a senior MVS systems programmer for a 6 month assignment at our Client's twin IBM 4341 Data Centre. The initial task will be to evaluate available DASD space management software against the Client's needs, organise trials of appropriate packages, then plan and implement the final choice. There will be some pressure on this task because of the imminent arrival of 3380's in May/June. The successful applicant is likely to have a good understanding of MVS, and preferably will have already carried out package evaluations.

J071

MVS Systems Programmer

Home Counties — c. £2750/month

We require an experienced Systems Programmer to act as the senior member of a team supporting MVS/SP 1.3 and JES2, recently installed under VM/SP on our Client's 3083. The task is to tailor MVS so as to improve the availability and performance of the production service which supports CICS, IMS DB and TSO, as well as to provide training and guidance to the other team members. The successful applicant will have a good understanding of MVS, and should preferably have some knowledge of the other products. The assignment is initially for 3–6 months with the possibility of extensions.

(7482)

CDS is an Anglo-Swiss Consultancy specialising in systems programming and DB/DC application development. *For further details of the above positions or for an informal discussion on future European or UK assignments please contact Mike Shine at our UK offices Tel 0276 681261 (or through our answering service on 0276 681266 during evenings/weekends).*

Telex 858062 CDS Limited, 19A Park Street, Camberley, Surrey GU15 3PQ.

CDS IBM Systems Programming and DB/DC Specialists

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(7420)

MARCH COMPUTER RECRUITMENT LTD 1 NOEL ROAD, LONDON N1 8HQ 01-354 1055

Systems Programmer — Networking

The Rutherford Appleton Laboratory, part of the Science and Engineering Research Council, supports scientific researchers in universities and polytechnics throughout the UK. The Computing Division provides large scale computing services and coordinates computing research programmes. There is a large IBM-compatible mainframe complex, and a number of VAX (VMS and UNIX), GEC, PRIME and PERQ computers.

A vacancy exists for a systems programmer with a strong interest in networking to work on a local area network development programme. The current developments use a variety of technologies including Cambridge Ring. The work is directed towards the adoption of national and international protocols such as IEEE 802 and ECMA.

Experience with more than one of the above machine architectures is desirable.

The appointment will be in one of the following grades, depending on qualifications and relevant experience:

Higher Scientific Officer £7,149–£9,561
Scientific Officer £5,682–£7,765

The Laboratory is a friendly community with its own restaurant and sports facilities nearby.

Benefits include a local transport service, sick leave allowance and generous holidays. Some assistance with expenses incurred in house sale/purchase may be available.

Application forms from: Recruitment Office, RAL, Science and Engineering Research Council, Chilton, Didcot, Oxon OX11 0QX. Tel: Abingdon (0235) 445435 quoting ref VN 191.

Closing date: 16th February 1984

(7406)

serc Rutherford Appleton Laboratory

AN IMPORTANT MESSAGE FOR

CONTRACTORS!

We are interested in hearing from all established contractors who are available for reassignment and also those who are intending to become freelancers within the next six months.

If your expertise is of a proven high calibre and your skills are not advertised then you are still most welcome to register with us as many of our clients' requirements are satisfied from our databank without the need to advertise.

Previous applicants are invited to update their registration.

Current requirements include:

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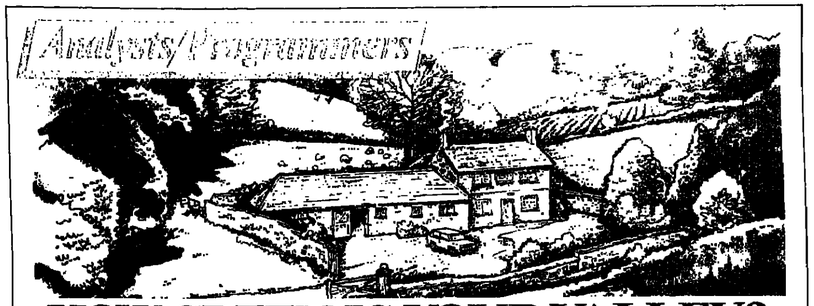

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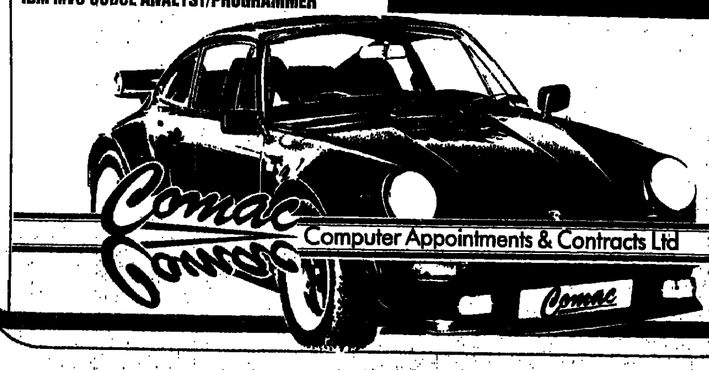

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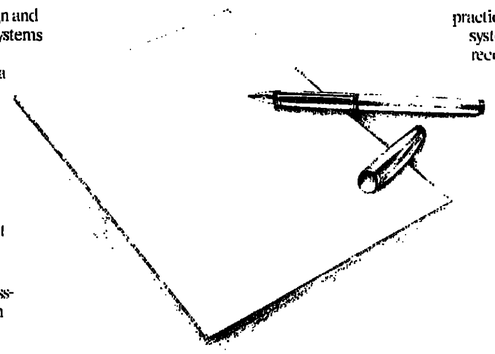

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Berkshire	*PDP11/70 RSX11/M FORTRAN*	Project Ldr./Anal.
London	*DG MV8 000 AOS INFOS COBOL*	Prog./Anal.
Midlands	*DEC System 10 1PL or IBM-AS FCS*	Programmers or Prog./Analyst
Berkshire	*DEC VAX VMS MACRO32 or C or PASCAL or BLISS + GRAPHICS*	Sys. Prog. bias Analyst/Prog.
Berkshire	*DEC Rainbow or IBM PC –*	Hardware Troubleshooter
Herts	*VAX VMS COBOL ± DMS 32 ± FMS*	Programmer

Specialists

Manchester	*X25 DM1 Distrib. TP/Database*	Comms. Consultant
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Birmingham	*9516 Pnt of Sale Term exper.*	Programmer
London	*Electronic Design Developmt.*	Electro Engineer
Sussex	*Process Control*	Programmer
London	*UNIX*	Software Prog.
Berkshire	*DEC Hardware + Software*	Engineers
Herts	*Executive Design + Implementation*	Systems Designer/ Programmer
Herts	*VAX VMS + UNIX Implement + Debug Software*	Systems Consultant
Herts	*Commercial experience*	Technical Authors

Other

Bracknell	*Small Systems*	S/ware Authors
London	*Banking experience*	Analyst
Bracknell & Portsmouth	*Electronic and Digital experience*	Systems Engineer
Bracknell	*FM1600D FORTRAN simulation radar and signals processing experience*	Software Engineer
Middlesex	*Data General Business Basic*	Prog./Prog.-Anal.

Overseas

Kuwait	*2900 COBOL VME/B IDMS*	Analyst/Progs.
Kuwait	*2900 COBOL DME G3*	Programmer
Kuwait	*2900 COBOL VME/B IDMS*	Tech. Specialist
Kuwait	*IBM PC Banking*	Analyst
Europe/UK	*IBM DOS/VSE VSAM CICS TOTAL SHADOW ASSEMBLER*	Systems Prog.
France/Switz. Germany	*SYS38 RPGIII* / *IBM CICS + COBOL*	Analyst/Progs. Business Analyst

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Salaries
£8,000–£16,000

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Our positive response to this enormous software engineering opportunity, combined with our recognition of the need for product portability underwrites our future success. All that remains is to attract the team of talented software professionals whose skill and original thinking will create the products.

Our development programme creates NEW opportunities for Project Leaders, Team Leaders, Designers and Programmers who will enjoy dedicated 'state-of-the-art' development, based on powerful 32 bit super minis.

Whilst experience of ADA/APSE would be welcomed we recognise the need to train. We would therefore wish to meet with candidates possessing at least eighteen months' software engineering experience using PASCAL, or indeed any similarly structured language.

If you feel you can contribute to this exciting realisation of the user-friendly and intelligent computer systems for the Fifth Generation, contact our Advising Consultants **Stephen Brown** and **Alan Carnell** on **01 935 0671** or telephone in the evenings from 7.00 till 10.00 on Hornchurch 72610 or Harpenden 2976. Alternatively, submit a full Curriculum Vitae in confidence to our London office, marking this reference GS2.

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Specifically we would like to meet:

MVS	Systems Programmers	London/Suffolk
PL/1	Senior Programmers	Suffolk
IDMS, COBOL or PL/1	All levels	Middx.
RPGIII, S/38	Senior Analyst/ Programmers	London, Middx.
PL/1, MVS, TSO	Systems Programmer	Hants.
Coral 66	Programmers	Middx.
VMEB, MVS	Programmers, Programmer/ Analysts	Middx.
HP 3000, Genysys	Programmer/Analyst	Essex
Fortran, Hons Degree in numerate subject	Programmer	London
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Telecomms. exp.	Software Engineers	London
Mantis, CICS	Programmers	Sussex
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Contract or permanent, we can offer you the range of positions and applications to broaden your technical expertise and enhance your career advancement into project management and beyond. We can also offer you excellent salaries plus the full range of benefits associated with a successful software house, including the opportunity to work on challenging projects throughout the UK, Europe, Middle East and possibly the USA.

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VAX OPERATIONS TRAINING INSTRUCTOR
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WANG H/W & S/W INSTALLER/SUPPORT SPECIALIST
12 mths. + Feb./Mar. start.

IBM PROGRAMMERS & ANALYSTS
12 mths. + Feb.-Apr. start. PLI, IMS, TSO/SPF experience.

For more details on the above and other scheduled assignments ring Bill NOW on 01-844-1722 or write enclosing detailed c.v.

(7475B)

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Cullinet

(7282)

Real-Time Computer Systems Professionals

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Software Engineers — Bristol

The Bristol office is primarily involved in the fields of space and communication systems. Both junior and more senior staff are required.

Junior candidates should have:–

- a minimum of eighteen months industrial experience
- minicomputer e.g. DEC PDP 11, VAX or microcomputer e.g. ZILOG 80, INTEL 8086 experience
- knowledge of high level programming languages e.g. FORTRAN 77, CORAL under MASCOT and/or assembler
- experience of working in a team environment

The more senior candidates should in addition have:–

- experience of real-time systems design
- proven team leadership experience
- the maturity to accept financial and technical responsibility for fixed price projects

Candidates having a background in either the aerospace or defence industries would be of particular interest.

Systems and Software Engineers — Aberdeen

Candidates for the position of Software Engineers should have:–

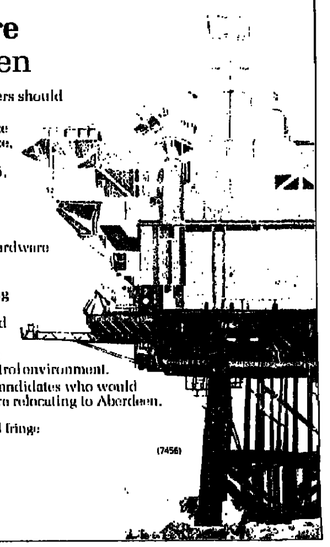
- a minimum of two years industrial experience
- minicomputer and microprocessor experience, in particular one or more of the following, MOTOROLA 68000, ZILOG 80, INTEL 8085, INTEL 8086, ARGUS 700 and DEC PDP 11
- knowledge of high level programming languages e.g. PASCAL, CORAL and/or assembler

Systems Engineers, with either a software or hardware background, should have:–

- a minimum of five years experience in instrumentation and/or control systems using minicomputers and microprocessors
- for more senior positions, proven contract and project management skills

Candidates for both positions will ideally have a background in a petrochemical or process control environment.

We would also be interested in hearing from candidates who would like to work in London for a short period before relocating to Aberdeen.



Salaries are negotiable and will fully reflect the challenging nature of the work and the degree of responsibility offered. Career opportunities are excellent. There is a good fringe benefits package and assistance will be given with relocation if necessary.

For further information regarding these opportunities please write to Derek Ashley at:–

(7456)

Science Systems Limited
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IBM SYS/38 PROGRAMMER/ANALYST PROGRAMMER

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THE VACANCY: Requires a professional who would like to work in a relaxed and informal atmosphere. The successful applicant will be encouraged to 'roll their sleeves up and get involved'. Every opportunity will be given to develop both responsibility and technical knowledge. RPG experience and self motivation are essential and the ability to communicate with users is important.

THE CHALLENGE: Will be in developing the sales force manager and solving the marketing division's long term software needs. In addition helping to complete the successful installation of Maapics with thought being given to the purchase of additional add-ons.

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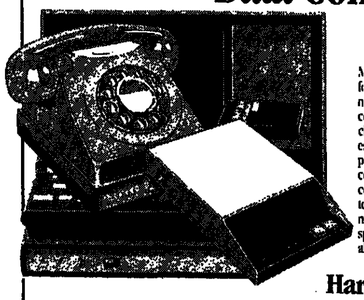

Many organisations claim to be at the forefront of modern technology, but few can match the advanced range of sophisticated communications products marketed by our client. As a young, but already well established and respected company, with a product range including modems, personal computers, viewdata software packages and communications networks, they are poised to make further inroads into the marketplace. Additional sales and support specialists are now needed to maintain the already considerable momentum.

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North of England & Midlands/West based
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Central London £11,000-13,000

A major UK Finance House based near Covent Garden is developing several major new systems, one of the most significant being a new Management Information System based on a 4th generation software package. The feasibility study stage of this project has just been completed and an additional Systems Analyst is required to join the small team which is about to start the main project development.

The successful candidate will have had at least 2 years Systems Analysis experience, preferably with MIS in an IBM mainframe environment. The ability to communicate effectively with all levels of management is essential.

Salary is negotiable within the above range according to experience, and will be accompanied by a generous benefits package which includes Non-contributory pension, group BUPA scheme, subsidised restaurant and, after a qualifying period, season ticket loan and mortgage facilities.

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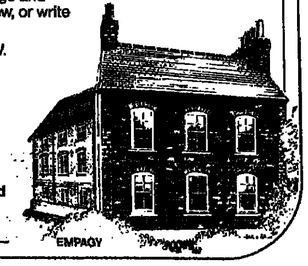

EMPAGY

IBM Systems Programming in Rural Wiltshire

We are the fast expanding Systems Programming Group of a large well established IBM mainframe installation. Our IBM 3031 under OS/VS1 has recently been joined by an IBM 4331 (VM/370 and APL) in order to provide a personal computing service to our users, and a migration to MVS is planned for early 1985.

This developing environment has now created opportunities for a number of Systems Programming personnel, with experience levels from Programmer up to Manager, to join and contribute to the expansion.

For the Systems Programming Manager and Senior Systems Programmer posts, we would obviously like a sound background in IBM software and the ability to control and motivate the technical team. For other positions, we are willing to build upon a good IBM background and provide software training if necessary.

We are prepared to be flexible when considering all applications as the training available is both comprehensive and varied. Successful Candidates will be involved in implementing major software developments, evaluating and installing software packages, and solving day to day problems. Excellent prospects are available to those seeking a career in systems programming, and benefits include relocation assistance and modern working conditions.

If you would like to be considered, contact our Advising Consultant, **Ian Mason** on **021-236 3781** (24 hour answering service) or on 021-353 5721 (Evenings and Weekends).

Systems Programming Manager to £13,700

Senior Systems Programmer to £12,200

Systems Programmers to £10,380

Technical, Sales & Management Appointments

(74191)

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Systems Analysts c £10,500
RPG III Programmer/Analysts c £9,000

Mid-Wales

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We have established an IBM System/38 facility that is at the very forefront of development, serving a diverse range of applications. But because we're ambitious and forward thinking, we do not intend to stop there. We want to maximise our computer power and consequently are investigating many new areas of involvement. That's where your challenge starts.

Systems Analysts (2 positions)

If you would like to be part of an exciting development programme covering Production, Retail and Financial systems in an online database environment, then we would like to hear from you.

System/38 experience is not essential. What is more important is an ability to develop systems from the initial feasibility stage through to full implementation with the minimum of supervision.

RPG III Programmers/Analysts (2 positions)

If you are an RPG III programmer with at least 18 months application programming experience we would like to hear from you.

We are starting a large scale development programme covering production, retail and financial areas in an online database environment involving the setting up of an international network.

You should be able to involve yourself totally in a department that expects its development personnel to liaise directly with users with a minimum of support.

Benefits for all positions include a 4½ day, 38½ hour week, 4 weeks holiday, discount on company products and generous relocation assistance when appropriate.

Phone Richard Milsum, for an informal and confidential discussion of your requirements on: 01-354 1055, during office hours or on 01-958 2553 evenings and weekends.
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IBM 4331 COBOL VM

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We are a well established and highly successful finance house, part of a major group. Our small data processing department currently supports an IBM 4331 mainframe under VM and using TSO, SPF, VSAM, DL/1 and SAS.

To strengthen our team, we are seeking an experienced COBOL Programmer, probably with two or more years exposure to VM and EXEC 2, to work on a variety of applications.

In addition to technical challenge and a high proportion of development work, we offer the prospect of early involvement in systems analysis within an informal and constructive working environment.

Benefits include four weeks annual leave, group pension scheme with life assurance and relocation assistance to Nottingham where appropriate.

If you can demonstrate proven ability in VM and seek a satisfying and absorbing future, telephone **Jim Mitchell** on **021-236 3781** (24 hour answering service) or on 021-427 2291 (Evenings and Weekends until 9.00 pm).

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Our commitment to the use of data processing has never been stronger. We make full use of IBM and TANDEM equipment, but of particular interest is delivery in mid-1984 of an IBM 3083 to replace an IBM 4341, operating MVS.

We are now at the early stage of a five year IBM Systems Development Programme, incorporating online and database techniques. Our core system for business is currently being redeveloped, and once implemented, a substantial new systems development programme will get under way. Fundamental to the success of this programme is the need to recruit in two areas —

Analyst Programmers with 3 or more years IBM COBOL experience;
Programmers with 2 to 3 years IBM COBOL experience.

For you to work effectively, we will provide full training in CICS and DL/1 (if you have these skills already, so much the better).

You will work in a project team environment which offers every opportunity for career progression to project management levels. Should you wish to further your career in more technical areas, then we have the scope for you to specialise.

Our location in Covent Garden makes for easy access from virtually all Main Line railway stations, and the Underground. Company benefits include Non Contributory Pension Scheme, Health Care Plan, Profit Sharing, Subsidised Staff Restaurant, Generous Holiday Allowance and, after a qualifying period, an Interest Free Season Ticket Loan and Subsidised Mortage.

Now that you have had a chance to consider, why not find out how to reap the benefits by telephoning our Advising Consultant, **Stephen Brown**, on the SCR London office telephone number below or **04024 72810** evenings and weekends. Alternatively submit a detailed C.V. to him at the SCR London office.

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SCR Specialist Computer Recruitment Ltd

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HOWARD

Contract Assignments

(Commercial and Hi Tech contracts in the UK and Overseas)

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To maintain and support client software. Hardware VAX and PDP running under VMS and RSX, based in W. Germany. German speakers preferred. £650p.w

IBM Software Programmers (6)
With minimum 3 years tech. support exp. of HWI370, 30XX, 43XX mainframes. In depth exp. on any of the following MVS MVS/SP/VM, DOS/VSE, etc systems and/or CICS DL/1 TSO/SPF IMS/DB/DC IDMS ADABUS COPICS Software Furniture contracts in W Germany/Austria and Switzerland for German speakers. £700p.w.

UNIX Specialist (1)
To install and provide UNIX support, on behalf of Software House, some travel from W German base. Assignment to run in excess of 1 year, must be German speaker. £ Very good rate.

Prog/Analysts (2)
Manufacturing company, East Midlands require experienced HP3000 MPE TPL contractors. knowledge of IMAGE VIEW QUERY and GENSYS would be a distinct advantage. to £500p.w. duration 3 to 6 months.

Design Engineers (3)
With Degree and exp. of VAX VMS and FORTRAN OR UNIX C ? to function in Hi Technology company, based in Scotland Applications include Engineering, 3D Systems, Electrical and Drawing Office. Graphics exp is an advantage £Neg. according to exp.

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Strong character to lead small team of Prog/Analysts, previous supervisory exp. required, must be able to speak German. Insurance systems exp. is essential. W. Germany based, long contract for right person. £750p.w

Database Designer (1) Database Administrator (1)
Start Feb 84, based Central Germany, prefer fluency in German, long assignments, IMS/DB/DC are essential requirements. £750p.w

IBM Software Programmers (3)
6 month contract blocks for experienced MVS System Progs. based in Northern Germany, must be able to speak German. £700p.w

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IBM USA and UK

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Telephone **01-836 6775** now
Ask for **Marilyn Davidson** or **David Thompson**

(7414)

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mān'age n.t. skillful use of means; succeed in one's aims.

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Applicants must have at least one year's experience of VAX system programming design using Macro and some experience in a commercial computing group is desirable.

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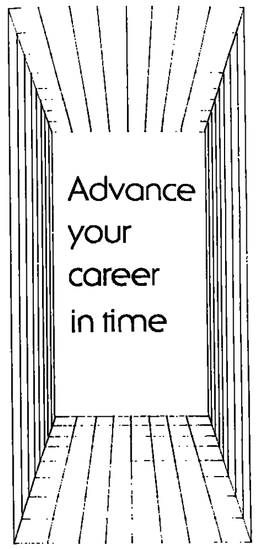
In the first instance, please contact T.M.B. Kerrigan Esq., 22 Bishopsgate, London EC2, Telephone 01-283 4200.

CSFB

SYSTEMS & SOFTWARE ENGINEERS



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Right now we are looking forward to a far more exciting year ahead and that is where the opportunity is to establish yourself within a young company involved in the design and development of the worlds most technically advanced projects. Order books are full offering job security well into the future. The time to make your move to a more ambitious future is now.

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Experienced engineers are required to derive mathematical models of complex weapon systems and their environment and to design and develop both digital and real time simulations of these systems

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Engineers are required at all levels with experience in one or more of the following to develop software on DEC or GEC Computers to control weapons or real time simulators –
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On the other hand you may prefer to see us at one of our informal interviews which run from February through to March at. **Dragonara Hotel, Bristol, February 2; Ladbroke Mercury, Watford, February 6; The Post House, Hemel Hempstead, February 9; The Crest Hotel, Welwyn Garden City, February 21; The Broadway, Letchworth, February 22; The Post House, Swindon, March 7,** it's up to you to take these real opportunities and influence events, where achievement is rewarded with career progression.

Or better still, telephone or write to Trevor Groves today

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Marconi

1984 OPPORTUNITIES

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IMB SYSTEM 34/38 DEVELOPMENTS
An extensive program of RPGII and RPGIII projects are currently scheduled with our client a well-known commercial organisation. They seek to recruit programmers to perform both programming and analysis liaising closely with the User area. Applicants should offer at least eighteen months programming in either language and RPGII candidates will be offered RPGIII training. Ref: A1

EAST BERKSHIRE **£9,500-£11,000**
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COBOL, CICS, DL1 projects are currently being developed by our client located in a very accessible part of Berkshire. They are seeking Systems Analysts with around two years' experience of Analysis ideally together with a programming background, and programmers with at least two years COBOL for whom CICS and DL1 training will be available, and project work will cover a wide range of commercial/financial systems. Ref: A2

CITY **TO £10,000 + BENEFITS**
RPGII/III – BANKING
International Banking systems provide constant challenge and interest in terms of computer systems development and our client is no exception. With systems already using RPGII on System 34 they are planning for the development of SYSTEM 38 RPGIII systems. If you can offer around eighteen months RPGII or RPGIII programming experience you can expect to develop your career towards system design and analysis. Ref. A3

NORTH KENT **£7,000-£13,000**
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To apply for these positions either write or telephone DP Selection Services quoting the appropriate reference.

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"We look forward to hearing from you."

(6446)

ANALYST PROGRAMMER
£12-14K

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The position requires extensive experience in Cobol programming. A knowledge of Hewlett Packard (Series 42) together with Image and V+ would be a distinct advantage. The successful candidate, who will have the experience and maturity to communicate with staff at all levels within the Company, will assume total responsibility for specific systems projects.

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(7465)

CONTRACTS

IBM

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DOS/VSE ASSEMBLER PROGRAMMERS	MIDDX
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ANALYST/PROGRAMMERS WITH "INQUIRE"	KENT
MVS COBOL IMS. ADF PROGRAMMER	SURREY
DOS/VSE PL1 ADABAS PROGRAMMER	SURREY
MVS SYSTEMS PROGRAMMER	SURREY
CMS ORDER PROCESSING ANALYST	BUCKS
VM SYSTEMS PROGRAMMER	MIDDX
OS/VS1 CICS RSCOE SYSTEMS PROGRAMMER	HERTS
SYSTEMS 38 RPG III ANALYST/PROGRAMMER	MIDDX & GLOS
SYSTEMS 38 RPG III PROGRAMMER	NTH KENT
JSP COBOL PROGRAMMERS (GAIN TANDEM EXPERIENCE)	LONDON

ICL

ME29 DME2, TME COBOL-TP MANAGER ANALYST/PROGRAMMER	LONDON
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SYSTEM 25 ASSEMBLER ANALYST/PROGRAMMER	MIDDX
SYSTEM 25 ASSEMBLER PROGRAMMER	MIDDX
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MICRO ENGINEERING ANALYST	SURREY
UNIVAC 1100 COBOL (BANKING EXPERIENCE)	ESSEX
REDIFON EDITOR PROGRAMMER WITH VIEWDATA	ESSEX
M 68000 UNIX C PROGRAMMER	SURREY

For details of these and other on going requirements please contact Lorraine, Lynne, Wendy or Tony at KPG, or contact Lorraine on Walton-on-Thames 245552 (evening and weekends).

(7602)

لهكذا عنه الأجيل

KPG

01-948 5922

KPG Computer Support Services Limited
Cobden House, Park Lane, Richmond, Surrey, TW9 2RA

Computer Operations Supervisor

HTV has two Honeywell minicomputers at its Cardiff administration centre: A Level 6 on which several financial applications are run and a DPS 6 which provides office automation facilities and transaction processing systems to administration users. A local area network is already installed and its use will be extended following the move to the new Television Centre at Culverhouse Cross. There is also a link to a Honeywell mainframe computer in London, which is primarily used for commercial air-time sales.

The use of the latest communications techniques and systems methods has led to an increase in the amount of specialist operations work within the Computer Department. As a result, a vacancy exists for a Computer Operations Supervisor, who will also have special responsiblity for providing end user support. Applicants must have a minimum of two years experience preferably at a senior level and they must demonstrate that they are competent users of available system software. A knowledge of Honeywell Level 6/DPS 6 hardware and GCOS6 Mod 400 system software would be an advantage though not essential.

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(7609)

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(7244)

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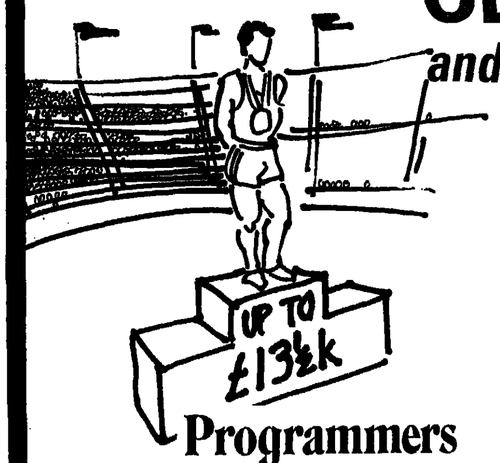
telephone 01-637 9611



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MANAGEMENT & EXECUTIVE SELECTION (7437)

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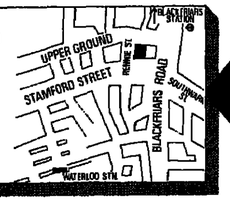

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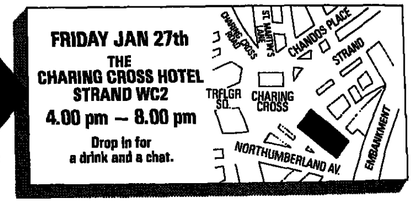

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If you have been working on the S/38 for at least 18 months, are friendly, confident and keen to develop your design and analytical skills – then you may be the kind of person we're looking for.

And if you want a competitive salary and the chance to work with a company which will recognise your ability, then you should certainly telephone or send career details with a summary of why you find this position attractive, to:

Sue Hayes, Banking Recruitment, Ref: CG1201

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We have for many years supplemented our own staff resources with freelance computer professionals and are currently planning our resources allocation for contracts starting early in 1984. All grades of staff are required to work both in the north and overseas.

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PE **P-E Computer Services Limited**
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(7452)

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Starting salary range will be c£10,000, with progressive increments. Benefits include non-contributory pension and life assurance, free BUPA and relocation help to this attractive area.

Our system is based on a Honeywell DPS4, using release 1.10 with IPS and our language is COBOL.

For further details please ring or write to: Alan Mundy, Flying Goose Limited, Barrow House, Bishopstrow, Warminster, Wiltshire BA12 9HU. Tel: (0985) 214566.

Dan-Maid Seafoods

(7473)

A CHALLENGE FOR THE FUTURE

Analyst/ Programmer

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As part of the planned build up of staff we are seeking a graduate with up to 3 years computing experience to join our Information Systems Department. This is responsible for establishing a complete range of computing facilities to the plant from manufacturing information through plant maintenance to financial and electronic office systems.
Initial role will be in the manufacturing information area with later opportunities to move to other parts of the company as the career progresses. Early responsibility will be given to work closely with users to meet their computing requirements.
The department uses primarily an IBM 4341 and a Data General MV8000 computer. The IBM system is based on a powerful relational data base management language. Other systems are available through the company network.
Candidates should be on their mid twenties. Training relative to previous experience will be provided. It would be an advantage for candidates to have a chemical engineering or computing science background, but opportunities are by no means restricted to individuals with this experience.

Systems Programmer

We are also seeking a systems programmer to take responsibility for the operating system on the IBM 4341 and its relational data base management system. Primary responsibilities will include the start up of this system and the provision of consultancy services to the company's plant at Fawley, Southampton, and two other sites in Europe. In addition the successful applicant will take some responsibilities for the Data General System and for commissioning and maintaining interfaces in a multi vendor environment.
Candidates should be in their mid twenties, ideally graduates with experience in a systems programmer role of IBM's VM operating system in a database applications environment.
However, consideration will be given to those candidates who have experience working with other operating systems.

Candidates can expect a competitive salary and benefits package which includes a relocation allowance where applicable.

Interested parties, male or female, should telephone 0592 262828 or write for an application form and job description to:

P W Allnutt
Recruitment Co-ordinator
Esso Chemical Ltd
Carlyle House, Carlyle Road, Kirkcaldy, Fife

ESSO CHEMICALS

Job Spot

TO ADVERTISE YOUR JOB SPOT VACANCY PHONE 01-5677500

SPL International

SOFTWARE ENGINEERS

Europe Scandinavia

to £13,000 + Overseas Allowance

SPL International is one of Europe's leading systems and software houses. To be able to meet the requirements of its expanding overseas operations throughout 1984, the company needs software engineers and programmers with at least two years' real-time development experience using:

★ **DEC: VAX PDP-11 VMS RSX-11**
★ **PASCAL RTL/2 FORTRAN**
★ **MOTOROLA INTEL ASSEMBLER**

The successful applicants will be working on advanced software development projects in Holland, Italy, Sweden and other locations in Europe and Scandinavia.

JA340/1

NCR

PROGRAMMERS ANALYST/ PROGRAMMERS

£attractive

Building on a century of success NCR serves the information processing needs of a wide range of businesses throughout the world. At the hub of European in-house development activity is UK Information Systems and Services, responsible for the systems, telecommunications, office automation and computer processing within NCR. Several vacancies exist for **Programmers and Analyst Programmers** to join a number of development projects using sophisticated on-line development tools on a variety of hardware from mainframes to personal computers. Successful candidates will be working in an advanced systems, telecommunications and office automation environment, with career prospects to assume specialist roles within ISS or the NCR marketing and support organisations.

LOCATION: N.W. LONDON **JA340/2**

ITT COMMERCIAL CABLE COMPANY

SOFTWARE ENGINEERS

£10-18,000

Over a century ago the Commercial Cable Company opened the first transatlantic cable. Today, they form part of the ITT Communications Operations Group, a worldwide network providing a variety of telecommunications services. As the company continues to expand so will their teams of dedicated software engineers. Applications are now invited from computing professionals with any of the following experience to work on development projects.

★ **PLMss, C, Assembler**
★ **8086, VAX**
★ **Message Switching, Real Time Operating Systems**
★ **Communications Protocols, Device Handlers**

In return we offer competitive salaries and excellent conditions of employment.

LOCATION: CITY **JA340/3**

Confidential Reply

SOFTWARE ANALYSTS

Excellent + car

Our client is a world leading manufacturer of 32-bit minicomputers. The support team plays a vital role in the increasing demand for the company's products. Vacancies exist for **Software Analysts** to expand the team responsible for UK and Northern Europe software support. Experience is required in two areas:

Scientific, Technical and Real Time – applicants should have four to five years' experience in a scientific, industrial or real time environment and be fully conversant with operating systems and communications software, scientific high level languages and/or assemblers.

UNIX and 'C' – applicants should have in-depth experience of UNIX and/or 'C' and will be involved in a challenging role of pre- and post-sales support of UNIX and its associated products.

We offer excellent salaries, company cars and a range of benefits normally associated with an organisation of our standing.

PR340/4

Action..
ring or send the coupon to:
D.P. Recruitment Services Ltd.
Freepost, London W5 2ST
01-567 5501
(A DUPONT COMPUTING COMPANY)

Name .....
Address .....
.....
Home tel ..... Work tel ..... Ext .....
I am interested in Ref. .....

(7446)

LANGTON

Langton Electronic Publishing Systems is an established but fast expanding systems house specialising in information management. As a stable and profitable organisation they cover areas such as text and graphics, demand printing, viewdata, on line retrieval systems, optical and video discs and computer assisted retrieval and delivery systems.

EXCELLENT BENEFITS PACKAGE

- Company cars with Snr appointments
- Bonus Scheme
- Pension Scheme
- Interest Free season ticket loan
- Flexitime

TRAINERS to £14,000 +OVERSEAS TRAVEL

As part of their expansion programme Langton require individuals with experience of training in publishing or software products preferably within an IBM or DEC environment. Reporting to the Training Manager you will be responsible for training customers in a variety of software products. The positions will require travel in Europe and potentially North America therefore foreign languages will be advantageous.

TECHNICAL SUPPORT ANALYST to £14,000 +OVERSEAS TRAVEL

Duties include installation and support of electronic publishing software products as well as trouble shooting on customer sites. There will be some travel in Europe and potentially North America. It is envisaged that opportunities will be created for the right person to eventually move into systems programming. Eighteen months development or support experience in an IBM VM or DEC VAX environment is essential.

TECHNICAL SUPPORT PROGRAMMER to £14,000

Responsibilities cover enhancing and maintaining software products including converting software to run on different computers and building a software tools environment for text and graphics processing. You should have two years experience in development or maintenance with a liking for thoroughness and the solving of complex problems. An understanding of IBM VM or DEC VAX Fortran is essential.

CUSTOMER SUPPORT ANALYSTS to £12,000

These are key positions reporting to the Product Support Manager. Responsibilities include supporting customers using electronic publishing software, pre sales and post sales support, manning of a hot line enquiry service, and setting up and running of demonstrations. Ideally you will have 2 years plus software development or support experience with a knowledge of either IBM or DEC. An understanding of the Xerox 9700 Laser printer or facsimile systems would be an advantage.

For an informal discussion regarding these opportunities please telephone Miles Richards on 01-938 1804 (24 hours) or 01-847 2385 (7pm-9pm).

IPP Information Processing People
Specialist Recruitment Consultants
20 Kensington Church Street, London W8 4EP
Telephone 01-938 1804 Telex 22861

RPG III
Join the High Flyers in Shropshire

We are a highly respected market leader in the consumer goods sector with a reputation for quality products that are enjoyed by a wide customer base. These products, together with innovative press and TV advertising, have elevated us to a very strong position within world markets and further growth is envisaged in 1984.

Within the next few months, we will be relocating our IBM System 38 facility from the City of London to Shropshire and we therefore now wish to recruit several experienced personnel with the knowledge and flair to make this move as smooth and efficient as possible and to contribute to our future success.

Programmer c £9,500

Our first requirement is for a Programmer, probably with at least eighteen months experience on IBM GSD facilities and with an in-depth knowledge of RPG II or RPG III.

Initial involvement will be on order entry and distribution systems, but you can expect exposure both on development and maintenance in a variety of applications.

Operators/Programmers c £8,500

We also wish to recruit two young Operators with some experience of IBM RPG programming who are keen to develop their skills in a progressive environment. After initial training in London, the successful Candidates will be given early exposure to a number of applications.

The excellent remuneration packages include four weeks annual leave, pension, life assurance cover and private medical insurance. Generous relocation expenses will be paid where necessary. These, combined with the very affordable housing and fine quality of life you can expect in Shropshire, make this an opportunity not to be missed.

To arrange a prompt and confidential interview, please contact our Advising Consultant, **Jim Mitchell** on **021-236 3781** (24 hour answering service) or on 021-427 2291 (Evenings and Weekends until 9.00 pm).

Technical, Sales & Management Appointments

SCR Specialist Computer Recruitment Ltd
35-37 Great Charles Street, Queensway, Birmingham B3 3JY 021-236 3781
Birmingham • London • Manchester • Brussels • Amsterdam

(7306)

Shift Leader
£9,033-£9,999 plus shift allowance

Computer Operator
£8,798-£8,154 plus shift allowance

READING

The Reading Computer Centre contains 2 × ICL 2966s, one operating under CME (G3/VME), the other under VME, and 3 Prime minicomputers. One 2966 will be upgraded to a dual 2988 in October for the new customer accounting system, involving a network of several hundred terminals.

Applicants for Shift Leader should have extensive operating experience in a large VME installation, including several years at a supervisory level.

Applicants for Computer Operator should have at least 18 months' operating experience in a VME installation.

Knowledge of Prime would be an advantage, but is not essential as full training will be given. A single shift system is currently in operation which will be extended to an early/late shift system later this year, for which an allowance will be paid.

You will be placed on the salary scale according to experience. Benefits include generous holidays, a staff canteen and good social facilities.

For more information and an application form, contact the Regional Manager, Computing and Information Services, Regent House, Vastern Road, Reading RG1 8DB Telephone 0734-593403

Thames Water

(7401)

UNIX UNITE!

London or Berks **£10-14K + Car**

The interest in UNIX is accelerating and represents YOUR CAREER GUARANTEE – perhaps for a decade. Versions proliferate, and so do opportunities – technical and commercial applications, system building, porting, support, development, etc *and there are dangers in specialising too early.*

Our clients are the recognised focal point for all UNIX topics and thus offer two unique benefits

1. A wide range of activities in which to build your future career.
2. Stimulus, recognition, feedback from other UNIX enthusiasts and experts.

Our knowledge of the UNIX market place is comprehensive ting Allan Benders today, to discuss your career objectives. Ref. CA335. (7400)

db executive (kingston) ltd
59 Eden Street, Kingston-Upon-Thames, Surrey. Tel: 01-549 6441 (24 hrs)

SENIOR PROGRAMMER
c£11,000

We are a small, fast growing Business Systems Company providing, at present, predominantly consultancy services to a wide range of (mainly international) customers. The company is experiencing increasing pressure to provide bespoke software and to develop its own package software for clearly identified markets. Extensive use is made of a range of Nixdorf hardware and software.

Applicants should possess sound programming skills, preferably in BASIC and COBOL (other languages will be considered). Systems experience in a business environment is preferable and the work is likely to require good communications skills.

The company can, in return, offer you:

- ★ A stimulating and pleasant working environment
- ★ A range of bespoke and package software projects
- ★ The opportunity for career development which only an exciting, fast growing company can offer.

Please write to:
Peter Davidson, Managing Director, PACT, 17 Lyons Crescent, TONBRIDGE, Kent TN9 1EX. Telephone: 0732 366011

PACT (7333)

ANALYST/PROGRAMMER
MINI/MICRO COMPUTERS

£9k-£12½k WEST COUNTRY

Application development and support for systems supplied to the Typesetting/Printing industry. We employ a small group of talented software people and now need to expand this team to cope with a growing order book. Experience of mini or micro assembler software a must with a minimum of three years' experience in computing.

We are currently committed to work in the following areas:

- ★ Text processing
- ★ Typesetting
- ★ Graphics
- ★ Mathematical formulae

Interest has now established itself as a market leader within the Printing industry – you could play a major part in our continuing success.

If you have the talent and self-reliance we can offer a lively, stimulating environment with plenty of scope for a variety of roles.

Please contact Wyn Thomas on 0761 232606 or write to him with full c.v. to Interest Computer Systems (UK) Limited, New Rock, Chilcompton, Bath BA3 4JE. (7430)

DALROTH

WORLDWIDE COMMUNICATIONS SYSTEMS
Project Managers
£16,500-£18,500 + car
LONDON BASED

Our client, with development headquarters in London, was established more than a decade ago and is currently a market leader in the Financial, Banking and Trading areas.

The Company are looking for Project Managers for their Communications Development Group to enhance their existing highly successful operations and, at the same time, establish a new generation of software to service its worldwide client base through its Operating Companies in the USA, Far East, Middle East and Europe.

Systems are presently based on DEC PDP11 and VAX hardware but future strategy is to make the software portable and therefore implementable on other CPUs.

Products include a range of International Banking Systems with a sophisticated interface package linking into the S.W.I.F.T. and other International Networks – they also have a store-and-forward message switching system which manages communications over Telex, Telegraph, PSS and Private Line Networks.

The successful applicants may be drawn from a wide range of backgrounds, but must have realtime or online development experience in a communications environment, be highly motivated individuals and able to work on their own initiative. They should also be willing to travel, both in the UK and overseas.

This is an ideal opportunity to influence the direction of future products, to grow with an expanding international organisation, and to be responsible for the design and implementation of their next generation of communications developments.

For further information, please contact Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947, from 8am to 10pm Monday to Friday, or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4579, quoting REF 5040.

DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON W1 ● TEL: 01-493 2947

(7479)

Computer Systems Planning Manager

National retail company, Manchester. To design and implement systems to control all operational aspects. Salary c.£12,000 + car + benefits. Educated to graduate level. Age: 28 to 45.

Phone for application form.

TransPromotions Ltd
The specialist recruitment & training consultants in transport and physical distribution.
137–139 High Street, Guildford, Surrey GU1 3AD.
Telephone: Guildford (0483) 502525 (24 hrs)

(7469)

Cobol Programmer
£8,000+ p.a.

We are an expanding company using an ICL ME29 computer with numerous ICL DRS mini-computers and require a person with 2-3 years' experience.

The position involves user liaison, the writing of new systems and maintaining of current systems.

Benefits include 22 days holiday and pension scheme.

Please telephone Roger Strong, Computer Manager, on 01-640 1151.

(7498)

PCL A MEMBER OF THE SCB GROUP

TECHNICAL SUPPORT ROLE • To £9,500 + Car + Bonus • West of London

Recognising certain characteristics is something our client, OCR Scandata knows all about. They are market leaders in the development and supply of sophisticated Optical Recognition Equipment which has placed them at the forefront of the UK, European and US markets. Their diverse products range from Hand Held OCR readers to 'State of the Art' full document image capture equipment. The applications utilising these products are equally wide ranging.

The Company is constantly improving the performance of its products and it is within the Software area that you will play an important role in a technical support capacity. This is a responsible and varied position within a team involved in both the development of customised software and also the demonstration and implementation of the company's products. The technical environment includes DEC, IBM and Perkin-Elmer hardware and a diverse range of mini/micro systems supporting the products.

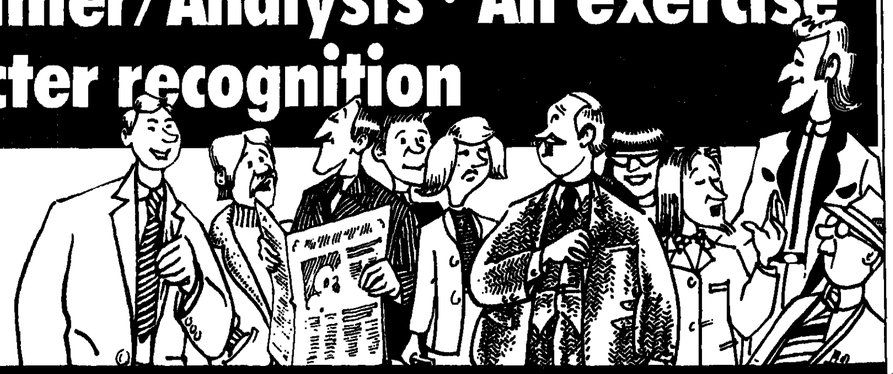
You'll be working with a variety of high and low level languages, with the latest developments taking place in 'C' and MS-DOS.

Ideally you should have experience of around 2 years programming in a mini/micro environment. Applications from candidates with the ambition to move into this field are also invited. If you have the technical ability and the confidence to communicate effectively, this is a company that will maximise your talents and stimulate you both personally and professionally.

And should you need further convincing; the rewards include a salary of up to £9.5K + car + bonus, private health scheme, pension scheme and life assurance.

If you can identify with such technical scope and career prospects call Hugh Macer up to 7pm Weekdays on 01-734 9723. Evenings and weekends 01-881 2788.

Programmer/Analysts · An exercise in character recognition



CTR

Computer Technology Recruitment Limited *Triumph House, 189 Regent Street, London W1R 7WD.*

Analyst/ Programmer

c.£10,500

Our client is a manufacturing company within the light engineering industry, part of an international group which is itself a public company. Their very well-established DP department (small, friendly and closely-knit) already has a good reputation within the company, having successfully implemented both major and minor projects, which include the accounting functions and order-processing. They are currently undertaking Production Control/ Inventory Management, which will be both on-line and Database. The environment is:

- **NCR 8555 • VRX COBOL**
- **TRANPRO • TOTAL**

For this position we are looking for 2-3 years' experience gained in a similar VRX COBOL environment. You will be responsible for your own project, or part of a project, from start to finish, including specification writing and user liaison. Implementation skills are particularly important.

Richmond-upon-Thames

Please contact Joan Ainsworth on 01-681 8311 or write to her at Computer Search and Selection Ltd, Carolyn House, *Dingwall Road, Croydon CR0 9XF.*

Computer Search & Selection

COBOL Programmers

Croydon to £10,000

Our client is an established Management Services department, in the process of developing new systems.

If you have at least one year's practical COBOL experience, preferably gained in a VME, DME or VMS environment, these positions offer you the opportunity of initial training in appropriate areas and other training as your career develops.

- **Subsidised mortgage**
- **Non-contributory pension**
- **Life assurance**
- **Free BUPA**
- **Removal assistance**
- **Flexible hours**
- **LV's**

ICL 2900 DEC/VAX Micros

Please contact Joan Ainsworth on 01-681 8311 or write to her at Computer Search & Selection, Carolyn House, Dingwall Road, Croydon, Surrey CR0 9XF.

Computer Search & Selection

Senior Analysts & Programmers

Manchester to £12,000 + Relocation

Our client is a well-established profitable company, a leader in its field, heavily committed to computer systems in a growth environment. The *installation* is based on an IBM 3083. An assembler background is required and experience of TOTAL would be a distinct advantage.

Contact Tony Roberts.

Systems Manager

South Yorkshire Attractive Salary (Neg.)

This particularly demanding position will interest a high achiever with sound DL1/CICS experience.
Responsible for a small team of analyst/ programmers, the successful candidate will provide a comprehensive range of integrated business systems. Career prospects in this major group are excellent.

Contact Barry Turton.

IBM Programmer & IDMS Technical Analyst

Cambs/Lincs Border £8,000 - £12,000

Our client, a subsidiary of a major company, has a sophisticated TP network based on an IBM 4341. Opportunities exist for an experienced IBM COBOL Programmer to develop and maintain on-line commercial systems. We are also seeking a Technical Analyst with good IDMS experience.

Contact Barry Turton.

BASIC +2 Programmer

Rural Cheshire c £8,000

This is an excellent opportunity for a programmer with around two years' experience to join a major high technology manufacturing company about to introduce DEC VAX hardware using BASIC + to develop and maintain manufacturing and commercial systems.
Knowledge of COBOL would be an additional advantage.

Contact Barry Turton.

OVERSEAS

Real Time Specialists Manchester/Europe to £18K

Our client, a major software group seeks a number of real time specialists with skills particularly in the industrial/ technical systems area. Of particular interest are skills in PASCAL, DEC/VAX, ASSEMBLER.

NCR Systems Specialists Brussels to £16K

A technical support group of a multinational organisation is looking for about six specialists with good NCR systems skills - VRX IRX IMOS - for permanent positions in Belgium. *Candidates may be either* operations or software biased.

RTL/CORAL/ PASCAL Benelux to £20K

An international scientific group is now strengthening teams in the industrial, communications and defence systems area. Candidates should have at least 18 months experience *in one or other of the* above languages.

ICL TP Specialist Luxembourg to £16K

A continental computer manufacturer is looking for an *additional TP specialist to join* its team supporting an ICL 2900 VME machine. Candidates must have sound experience of ICL TP systems including knowledge of CSC and MPS.

Contact Brian Harris

REAL TIME

CORAL 66 Programmers Cotswolds to £15K

An avionics group based in an attractive West Country area seeks a number of CORAL 66 software engineers for a large development project using DEC/ VAX systems. Candidates should preferably have at least one years experience.

Microsystems Specialists Lancashire to £11K

An *engineering* group with a high profile in industrial automation technology seeks a number of software engineers with experience of scientific/ industrial software development. *Candidates should have* at least one years experience of ASSEMBLER, PL/M or PASCAL.

CAD/Graphics Specialists Cambridge to £14K

Our client, a *British* software organization is now seeking additional development staff for its Cambridge Headquarters. Candidates should be able to offer knowledge of FORTRAN based graphics systems based on VAX or PRIME computers.

Project Leaders Staffordshire to £16K

Our client, a special group developing civil command and control systems is anxious to recruit a number of *senior* software specialists with significant skills in real time technical systems using DEC GEC FERRANTI or any mini computer.

Contact Brian Harris

NORTH

IBM COBOL Programmers Humberside & North East to £9,500

Clients in the North East and Humberside wish to recruit experienced IBM COBOL programmers in DOS/VSE installations.
Relocation packages may be available.

Analyst and Programmers West Yorkshire to £13,000

We have a number of vacancies to suit candidates from a variety of backgrounds. Of particular interest would be programmers with IBM/ICL COBOL, and analysts with manufacturing or distribution or financial experience.

Contact Barry Turton

Management Consultants UK—City locations to £18K

Candidates should be aged 27-36 with a minimum of four years varied commercial DP experience with management exposure. A degree or professional accounting qualification is mandatory. Some mobility is required.

Contact Tony Roberts

For further details please contact the appropriate consultants, on 0270 627206 daytime or evenings and weekends as follows: Tony Roberts 0270 624058 : Barry Turton 09363 4743 : Brian Harris 0270 629454 : Olga Penn 0270 624136 : Alison Jary 0270 625436.

MIDLANDS

IBM S 38 East Midlands to £8.5K +

Well established manufacturing company has a vacancy for an analyst programmer with RPGII or III skills. Experience of MAAPICS would be an added advantage. Relocation paid.

ICL COBOL Leicestershire to £8.5K

Our client seeks a young analyst programmer with a good COBOL background who is seeking to gain further experience in a manufacturing environment. Knowledge of OMAC preferred.

IBM COBOL, PLI East and West Midlands to £10K

Our client is currently seeking IBM programmers with Cobol and/or PLI skills. Experience of CICS preferred. Good salaries with relocation package.

Burroughs COBOL South Yorkshire to £10K+

A large successful company is seeking additional COBOL programmers with at least 18 months' experience on large Burroughs mainframes. Excellent career prospects.

Contact Olga Penn

SOUTH & WEST

CICS and Database Middlesex to £13.5K

Following expansion our client is looking for several analyst programmers. Two positions require one year CICS plus 2 years' general DP in an IBM installation using COBOL or Assembler. Others require a *minimum of 1 year's database*, preferably IDMS and 2 years' general DP, again ideally in an IBM environment with COBOL and MVS. ICL IDMS would be considered.

Analyst/ Programmers Wiltshire to £10K+

New developments have created vacancies to work on financial and insurance systems within this IBM environment. COBOL is essential and exposure to IBM and financial systems would be advantageous. Up to 5 years' relevant experience desirable. Good benefits.

Honeywell L64 Wiltshire to £8.5K

Our client requires a programmer with a minimum of 3 years' experience of Honeywell L64 and COBOL to work in a commercial environment. *Exposure to L6 or ICL DRS* would be advantageous.

IBM Analyst Programmers Hampshire to £10K

Openings exist for analyst programmers at various levels with this well-known company. Knowledge of COBOL is *essential. Good prospects.*

IBM COBOL Berkshire to £10K

Several vacancies exist for programmers at varying levels to work on commercial systems. A minimum of 2 years' IBM COBOL is necessary. Knowledge of CICS would be an advantage.

Contact Alison Jary

OCC Computer Personnel
5 Hospital Street
NANTWICH
Cheshire
(0270) 627 206

Are you looking for a better job?

We can help

Name _____
Address _____
Tel. Home _____ Tel. Work _____

Complete and return (freepost). We will contact you.

Software Engineers *Who've fallen on hard times...*

We don't mean those with holes in their clothes, hunger pangs and bare feet – if they exist that is. No, the people we want to talk to are the ones who have been suffering from lack of scope, poor facilities and project boredom. You're ambitious Software Engineers, and we have your greatest incentive.

As a major international systems consultancy, Cord can offer you everything that reflects professional excellence. Our specialisation in the high technology areas of computing means that our expertise is in demand for short term consultancy up to million pound projects. We are dynamic, profitable and developing fast. What's more, we understand exactly what makes someone like you tick.

Consider a diverse range of applications embracing communications, real time, and defence, each of which will fully stretch your capabilities. You'll work at the forefront of technical software design, using the finest available facilities and making a tangible contribution at every stage from concept through to completion. What's more, you'll be working towards implementation every time.

No one could extend your experience so quickly, and nowhere will you find better prospects. You'll be continually challenged by our flexibility, working both inhouse and at client locations, with well defined responsibilities.

Matching our pace means being bright, presentable and outgoing. Aged 25-35 you're probably a graduate, although our emphasis is primarily on experience, which must have been gained over at least 3 years in a relevant scientific or technical background, where you will have become familiar with technical and real time languages such as Assembler, Coral or Pascal. All this will bring you career development fast, with early management responsibility.

Salary wise, we're talking up to c£15,000 depending on your ability. And there are many other benefits such as first class training, free personal PPP, insurance, a pension scheme, expenses and relocation assistance if necessary.

So phone Derek Pearson on Staines (0784) 63911 during business hours or on Bromley (0689) 50709 evenings and weekends.

Alternatively, if you prefer, write to him at Cord Designs Limited, Cord House, The Causeway, Staines, Middlesex TW18 3AX.

Cord Designs Limited

ZEUS HERMES DIVISION

SPL SPL SPL SPL SPL

international

ADVANCED INFORMATION TECHNOLOGY AND KNOWLEDGE ENGINEERING OPPORTUNITIES TO JOIN ONE OF THE UK's LEADING GROUPS. SALARIES TO £18K.

SPL International's Research Centre is the Company's corporate focus for advanced information technology. The Centre's work involves the design, development and marketing of software tools and technology for use within the Company and for its clients in the UK, Europe and the rest of the world. During 1984 the Centre will be making investments in new Knowledge Engineering tools and advanced knowledge-based application.

In support of this programme applications are sought from individuals who have experience of and can demonstrate achievement in one or more of:

KNOWLEDGE ENGINEERING
Consultancy, design or implementation skills in K.E. including the development of at least one significant application preferably in sensor data processing or with a large MMI component. For senior positions a broad group of KBS techniques is essential.

SOFTWARE TECHNOLOGY
Design and implementation of advanced interactive software environments including object oriented, applicative, list processing and logic programming languages, relational database and expert system shells.

EMBEDDED SYSTEMS
Consultancy or project management skills in embedded applications including plant monitoring and control, EM and acoustic sensor data processing, tactical simulation and military or related command and control systems.

The Research Centre is located in an attractive part of the UK at Abingdon, near Oxford. It maintains strong links with other SPL Divisions, both in the UK and continental Europe. Extensive computing facilities are installed including a powerful VAX configuration, PDP service machines and a wide variety of micros. Software environments include POPLOG, PROLOG, LISP, ADA, SAGE, ALGOL68, PASCAL and RTL/2.

To applicants with the right experience, motivation and innovative skills these opportunities offer:

- ★ **Competitive salary with relocation as appropriate**
- ★ **Excellent career prospects in a growing organisation**
- ★ **Scope for innovation at the front of current thinking**
- ★ **Visibility and recognition of individual effort in small teams.**

Write with c.v. or call: Cheryl Carter, SPL International Research Centre, The Charter, Abingdon, Oxon. (Tel: 0235 24112).

(7703)

Permanent Job Opportunities

Real Time

Salaries £8K to £17K p.a.

The Permanent Recruitment Division of **S-COM** has vacancies in **LONDON, HOME COUNTIES, SOUTH** and **WEST** for Software and Hardware Engineers with at least one year's Real Time experience in one or more of the following:–

- **Communications Voice and Data**
- **Process Control**
- **Graphics Defence**
- **Local and Wide Area Networks**
- **Mathematical/Scientific Programming**

These vacancies are all with client companies involved in State-of-the Art Engineering and offer exciting opportunities for advancement. Experience of **DEC** systems and or **INTEL** or **MOTOROLA** micros would be an advantage. Salaries range from £8K to £17K with relocation expenses where appropriate.

Telephone Today

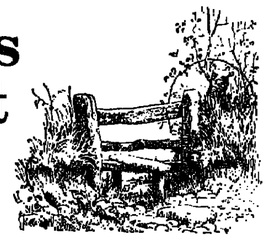
Ask for **John Ford** quoting reference CW/26/01 to learn more about these opportunities or write enclosing cv to:

S COM **Computer Systems Engineers Limited**

Tower House, High Street, Aylesbury, Bucks. Tel: 0296 32023
Evenings after 7pm or weekends: 01-450 9444

(7607)

Systems Analyst



Business Technology

Circa £10,000 + Relocation

Cheshire

The Client
Is a highly successful and profitable company operating in the forefront of technology. Located in an attractive part of Cheshire, it is well serviced with motorway, road and rail links.

The Position
Is within a small Business Technology section working in the field of office systems encompassing such areas as information storage and retrieval, text processing, personal computing and the associated equipment and software.

The Candidate
Ideally will be a graduate with at least two years systems analysis experience. It would be particularly beneficial for candidates to have had specific experience of one or more of the areas outlined above. Good communication skills and the ability to operate independently or as part of a project team are essential personal characteristics.

For further details please ring Tony Roberts on 0270 627206 during the day or 0270 624058 evenings and weekends. Or write to him at the address below.

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Specialists since 1971 in UK and International computer & technical appointments

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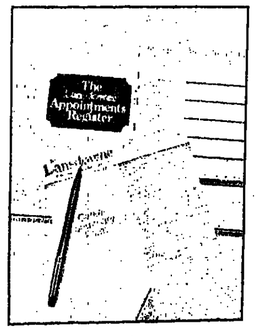

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It's like no other application form: it's so brief and easy to fill in. But it tells employers just what they need to know to pick you out for a job offer.

In just 3 days, one Lansdowne job-seeker was approached by 27 employers.

We've spent 12 years introducing employers to job-seekers. At the same time training and shaping the information we ask for into the lean fighting form employers welcome and use.

Our computer instantly memorises your form and compares it with the vast number of vacancies we've been asked to help fill in 283 different job categories. And we scan the Register every day to see which of the latest incoming vacancies might suit you.

We need to do this because the Lansdowne team is talking to employers about job vacancies day in, day out by phone, mail and face to face. So new vacancies are constantly being added to Lansdowne Appointments Register.

We could have one in there for you right now. And it costs you nothing to find out.

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Appointments Register

To Stuart Tait,
Lansdowne Appointments Register,
Park House, 207-211 The Vale,
London W3 7QB.
Please send me a Lansdowne Appointments Register job finding pack.

NAME
JOB TITLE
ADDRESS

CW/26/01

NOW SHORTLISTING
Programmers
Programmer Analysts
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Support Analysts
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01-743 6321 (24 hours)

All posts are open to men and women and our services completely confidential for companies and job-seekers.

NETWORKING SPECIALIST

West London based c£12,000

The expanding Telecommunications division of a major international British Group, with a turnover in excess of £4 billion, provides information systems support to a wide variety of users throughout the UK. To ensure that the three major networks (voice, statistical multiplexors and SNA) continue to provide the excellent communications required by the group, they now need to recruit a networking/communications specialist.

Your responsibilities will cover the installation of all new equipment and liaison with end-suppliers. In addition you will work with the technical support team to identify user-orientated problem areas, which will obviously involve some travel – for which a car will be provided where necessary.

To move into this fast-moving environment – where change is the norm rather than the exception – you should be a self-motivated network specialist with a background in diagnostics. The team is young and sociable, the work is hard:- the rewards are excellent.

Ring Jayne Longmore on 01-948 5922, Now, for an immediate interview or write to her at KPG.

Please quote Ref: JKL/530

KPG
01-948 5922

KPG Computer Support Services Limited
Cobden House, Park Lane,
Richmond, Surrey, TW9 2RA

EMPAGY

Communications Development

Project Leaders
Software Engineers

Berkshire
£8k-15k

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Communications Designer

BERKSHIRE — **Up to £14,000**

A major manufacturer of minicomputers is seeking Programmer/Designers to develop communications systems. The project involves support, design and development of X25 Level 2 software and LAN Link level software for Unix System III-based workstation.

Candidates should have practical experience of X25/HDLC or similar protocols. Additional experience of Pascal, C, Unix is highly desirable.

Successful candidates will gain valuable experience in the implementation of the lower four layers of the OSI model including Network definition and control. CW 2/4

Florida

NETWORKS/X25 — **Up to $50k**

One of the world's most innovative producers of communications and information systems is currently seeking to recruit additional Comms experts to work at their laboratories in Florida.

The company is looking for experts with two main areas of expertise: Data communications specialists, requiring highly qualified candidates with experience of X25 and related protocols, package switching and network diagnostic equipment experience.

The second area calls for Network software specialists; at least two years' experience of VTAM, BTAM and NCP. Additional experience of a COMTEN or IBM 3705 hardware is desirable.

In addition to the technical skills to be gained, the company provides a comprehensive benefits and relocation package. CW 2/10

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Communications Manager

BERKSHIRE — **Up to £18,000 + bonus + car**

The Computer and Communications Manufacturers Business Section of a major systems house have created a new Account manager's position to assist in the development and management of this important business area.

This position calls for the combined ability of (A) selling/marketing the company's services and (b) a solid systems development background with more recent experience of communications systems, e.g. IBM Comms, ICL Comms, X25 and LANs. Finally, candidates should possess project management experience preferably with some financial and contractual responsibilities.

This position offers the successful candidate the platform to assume further business responsibility in the future. CW 2/3

Coral/Mascot

LONDON/SURREY — **Up to £15,000**

A leading consultancy commanding large contracts with the MOD require *professional Programmers and Software Designers to work on Realtime systems.* Candidates should have a degree plus experience of Coral and preferably Mascot. Experience of Context and VAX machines would be helpful.

Successful candidates may look forward to enhancing their careers within an organisation proud of its reputation for professionalism and career development. CW 2/5

C³ Development

LONDON/HOME COUNTIES — **£16K + Package**

One of Britain's leading information systems contractors is seeking consultants *for research and development on major C³ projects.*

Candidates should have a numerate science degree and have at least five years' experience in Defence Communications, working on large projects like Ptarmigan, BATES, etc. Candidates should have a thorough understanding of communications systems, analysis and design. CW 2/6

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Automation Systems

CENTRAL LONDON — **£8-18k**

The Industrial Group of a leading software company seek Junior Programmers *up to Senior Consultants to assist in the immediate development of a number of* new major contracts recently acquired.

Candidates suitable for the medium to senior levels should have significant experience in software design and/or project leading, particularly on projects using DEC and HP1000 machines. A minimum of four years' experience is sought in one of the following three areas: (1) Plant Control (warehousing, materials handling, process control), (2) Distributed Control (wide area networks, automated retailing systems), and (3) Software Technology (X25, ISO standards, Unix).

Programmers should have a degree plus a minimum of six months' experience. Project work will be as outlined above and candidates will ideally have worked *on minicomputers, e.g. DEC, HP1000 and Gould SEL,* using Pascal, Fortran and COBOL. CW 2/7

Switzerland

TELECOMMUNICATIONS — **ENGLISH SPEAKING**

An international telecommunications company in Switzerland is currently seeking Software Designers to develop TELETEXT applications based on Intel 8086s.

Candidates should have a Computer Science or similar degree *plus two to three* years' experience of microprocessors (ideally Intel), Assembler, and a high-level language (ideally Chill). Experience in Realtime communications, ideally X25, is desirable.

Successful candidates may look forward to enhancing their career prospects, gaining valuable experience in an international environment. CW 2/9

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Scientific Engineers

DORSET — **Up to £11,000**

One of the country's leading software houses have recently opened an office in Dorset in order to service their local client base in the South-West of England.

In line with this expansion, our client currently needs a number of Engineers, from graduates up to experienced professionals, to assist them in their development projects.

Candidates should have a relevant degree together with one or more of the following skills: Fortran on ICL/IBM Scientific Applications, Z80, Unix, Operating Systems, Pascal, Coral, Mascot, Context, VAX/VMS, Fortran and General Software/Scientific Applications experience.

Successful candidates will work in-house or within easy travelling distance of the office. CW 2/1

Hardware/Software Engineers

BERKSHIRE — **Up to £12,000**

The Industrial Systems Group of a major systems company have an urgent requirement for a number of additional Programmers and Engineers to work on the design and implementation of a wide variety of *Realtime systems. Applications include flight* navigation, CAD, robotic materials handling, ATE, communications and networks.

Based on a degree background, candidates should have a minimum of one year's experience of mixed hardware/software applications. Languages should include at least one of the following: Assembler, Coral 66, Pascal, PL/M, Fortran, C and Ada.

Successful candidates will enjoy demanding work involving finding hardware/software total solutions to a variety of applications. CW 2/2

European Careers

HOLLAND — **£12.18K**

The Dutch division of a leading software consultancy is currently seeking additional Software Engineers and Engineers to strengthen a number of project teams involving a variety of communication systems.

Projects will cover Realtime software, air traffic control, networks, defence, petrochemical applications, CAD, robotics, Unix and Assembler.

In addition to the above technical experience, successful candidates must demonstrate a willingness to take project management and client liaison responsibilities.

This is an excellent opportunity to develop your career towards consultancy, combining high technology, European marketplace, team leadership and project management. CW 2/8

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics, Freepost, Surbiton, Surrey KT6 5BR

SALES EXECUTIVES

£27K on quota

IN BRISTOL, BIRMINGHAM, CRAWLEY, WAKEFIELD DUNSTABLE, EDINBURGH, LONDON & MANCHESTER

you have one year to live!

if your company doesn't already have 5th generation natural language systems

We are probably the fastest growing computer company in the U.K., with the resources both financial and technical of a major U.S. corporation.

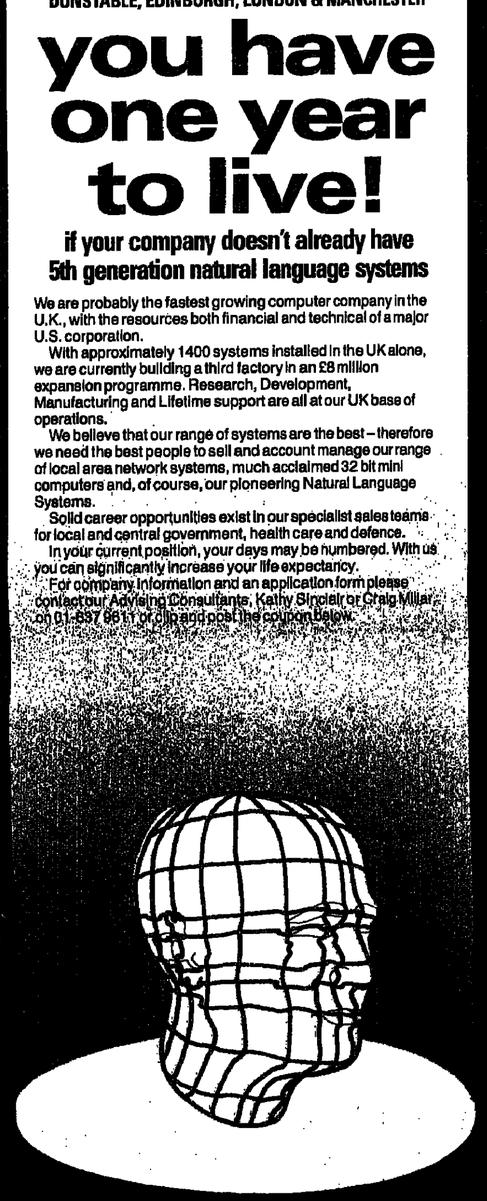
With approximately 1400 systems installed in the UK alone, we are currently building a third factory in an £8 million expansion programme. Research, Development, Manufacturing and Lifetime support are all at our UK base of operations.

We believe that our range of systems are the best – therefore we need the best people to sell and account manage our range of local area network systems, much acclaimed 32 bit mini computers and, of course, our pioneering Natural Language Systems.

Solid career opportunities exist in our specialist sales teams for local and central government, health care and defence.

In your current position, your days may be numbered. With us you can significantly increase your life expectancy.

For company information and an application form please contact our Advising Consultants, Kathy Sinclair or Craig Millar on 01-637 8811 or clip and post the coupon below.



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Suite 201-208 Albany House,
324 Regent Street, London W1R 5AA

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PLAY A SPECIALIST ROLE...

with one of Europe's leading computer services companies

MULTI-USER SECURITY

SECURITY MANAGER LONDON BASED Salary – Negotiable

This newly created post carries full responsibility for the data and physical security of a large multi-machine bureau and its extensive network. Working largely independently you will report your investigations for discussion with senior management.

To handle this key role the ideal applicant will possess experience of:

★ security procedures in a large installation
★ operations management/support functions
★ communications and system software

It is essential that you have a strong but diplomatic personality, are meticulous and able to communicate at all levels.

To learn more about this unique opportunity contact Kay Stebbings, on 01-836 8411 or write to Co Operators , 68-69 St. Martins Lane, London. WC2N 4JS

CoOperators
part of VLI Computer People

The Market Leaders

Software Designers Analyst/Programmers & Programmers for our Software Development Team and Online Project Teams

Telecomputing has, over the last ten years, established an enviable reputation as a leading independent software house. Our main product, TPS, is used at 450 installations around the world. TPS provides a complete transaction processing environment which is unique in the facilities and portability it offers to its users.

Another very important part of the Telecomputing operation is our Client Services division. This provides consultancy, design and programming services to our customer base. We specialise in turnkey projects providing first class systems on time and on cost.

Telecomputing is now recruiting more people to help us achieve our exciting objectives. We need designers and software programmers to give us the extra capacity to produce the software products that are needed to overcome the applications backlog and allow our users to realise the full potential of their hardware.

Our client services team is experiencing unprecedented demand for its resources, so we need more people capable of designing and producing the excellent systems which are the foundation upon which we have built our success.

Salaries are highly competitive as you would expect from a leading software house.

The company actively encourages career development and provides an exciting range of opportunities for people who can accept a challenge. Our new Oxford offices provide first class working conditions and our development hardware which comprises ICL ME29, 2956 and IBM 4331 ensures the right resources for producing software to schedule.

Software Designers: we need people capable of making an original contribution to the design of our new products. Previous experience of software design is desirable but not essential. Knowledge of any of the following areas would be relevant: Applications generators, relational database, IKBS, MMI, DSS.

Development Programmers: we require career programmers, preferably with experience of assembler level programming, but if not good experience of a BCPL like language (C, PASCAL, S3) is essential. Based in Oxford the jobs are in a team where all individuals must be able to solve problems and program their solutions.

Consultants/Analyst Programmers: Based in Oxford or London we require people with experience in On-line systems with a mainframe COBOL programming background (ideally IBM or ICL) who are capable of designing and leading a team to produce innovative systems to commercial timescales.

Programmers: Based in Oxford or London these people must have at least two years' IBM or ICL COBOL experience preferably in an on-line environment. Much of our work is carried out on clients' sites so a willingness to work away from home is essential.

Trainee Programmers: Must have had some experience of COBOL programming. Based in our Manchester office, preference will be given to local applicants who will not object to long periods working on client sites away from home.

Is to telephone or write to:
Terry Kirk
Telecomputing plc
244 Barns Road
Oxford OX4 3RW
(0865) 777755

(7299)

PUBLIC SECTOR APPOINTMENTS

Head of School of Information Technology

Salary scale: £12,519-£15,744

Chichester College of Technology, Westgate Fields, Chichester, PO19 1SB

Required as soon as possible (Principal Lecturer Grade). Post combines high level of computer programming and ancillary subject areas expertise/teaching experience in COBOL/BASIC plus low level language knowledge, with necessary administrative skills to develop and sustain growing and vital area of Department's work. Recent commercial/industrial experience desirable, together with appreciation of business computer applications.

Assistance given with removal expenses in certain circumstances.

Form and details from Principal at College, s.a.e. please. Closing date 10th February, 1984.

West Sussex COUNTY COUNCIL

(7488)

WARRINGTON BOROUGH COUNCIL
HOUSING SERVICES DEPARTMENT

COMPUTER INFORMATION SYSTEMS MANAGER

GRADE PO1(1-5) £9,945-£11,052

Applications are invited from persons with suitable experience in computer systems development for the above senior appointment reporting to the Chief Housing Officer and managing the Computer/Research Section of the Housing Services Department.

The Borough operates an expanding central systems base on a large ICL mainframe. Additionally the distribution of computer systems in the Housing Department is a major development area, which includes mini and micro applications.

The ability to control developments from feasibility through to operation is essential and candidates with experience of Housing Systems development would be of particular interest.

Self-motivation, discipline, good communication and proven high regard of data processing standards are essential. Professional, technical and specialist experience must be backed by appropriate qualifications and will be reflected within the above salary range. A casual user car allowance is payable.

Application forms and job description are available from the Personnel and Management Services Officer, Warrington Borough Council, Town Hall, Sankey Street, Warrington (Tel: Warrington 36981 Ext. 32) to whom completed forms should be returned by 15February, 1984.

(7489)

UNIVERSITY OF GLASGOW COMPUTING SERVICE

SYSTEMS PROGRAMMER

Applications are invited for a Systems Programmer to work in the Mainframe Assistance Section of the Centrally Located Facilities Division of the University's Computing Service, to be concerned primarily with maintenance of the VME operating system running on an ICL 2988 computer.

Applicants should be in the possession of a good Honours Degree (or equivalent) and previous experience of the ICL VME (or VME/B) operating system would be an advantage. The appointment will be made on Grade 1A of the National Other Related Staffs scale, currently in the range from £7,190 £11,615 per annum.

Further particulars may be obtained from the Academic Personnel Office, University of Glasgow, Glasgow G12 8QQ, where applications (3 copies), giving the names and addresses of three referees, should be lodged as at 20th February, 1984.

In reply please quote Ref No 5196P

(7471)

BIRKBECK COLLEGE
(University of London)

COMPUTER OPERATOR

required in the Computer Unit to work on a two shift basis involved in the operation of a VAX-11/780 and associated networking equipment. Applicants should have some experience of VAX/VMS and be educated to O-Level standard. Salary on scale £5,772-£7,250 p.a. including London Weighting, according to age and experience, plus a shift allowance of £720 p.a. Applications including full CV and names of two referees should be sent to the Assistant Secretary (Personnel), (CW) Birkbeck College, Malet Street, London WC1E 7HX

(7483)

ANALYST PROGRAMMER MICRODATA SEQUOIA

Bristol/Bath Area
£8154-£9660 per annum

The District Council are installing a Sequoia supporting a network of 30 terminals. Initial work will involve the transfer of systems from an existing mainframe computer. Following this a number of new mainly non-financial applications are planned.

Applications are invited from people with suitable qualifications and experience.

Removal expenses will be reimbursed and there will be assistance towards house sale and purchase fees as appropriate.

Applicants who wish to discuss this post informally with the Computer Manager, are invited to contact Mr. Broome after 23rd January on Ext. 256.

For further details and an application form, please contact Susan Phillips, The Civic Centre, High Street, Kingswood, Bristol BS15 2TR, telephone (0272) 601121, Ext. 212. Please quote post reference CFO/53.

Closing date: 3rd February, 1984.

Kingswood District Council is an equal opportunity employer.

(7331)

CYNGOR DOSBARTH MEIRIONNYDD

DADANSODDWR/RHAGLENNYDD

(ar gyfer peiriant ICL ME29)

GRADDFA CYFLOG SO1 £9,060-£9,660 y flwyddyn

Disgwylir i ymgeisydd llwyddiannus gynllunio systemau newydd, a bod ganddo brofiad o addasu'r iaith RANGE COBOL, sy'n cynnwys TME-TP a TME-RAPID. Mae rhan fwyaf o Ddosbarth Meirionnydd ym Mharc Cenedlaethol Eryri, ac mae'r swydd hon, nid yn unig yn cynnig penefrau deniadol, ond mae hefyd yn gyfle i fyw yn un o'r llefydd mwyaf prydferth Prydain.

Bydd yr cymorth gyda costau symudo ac, ar adeg mewn amgylchiadau arbennig

Cais Pamffled, Ddisgrifiad Swydd a Ffurflen Gais oddiwrth y Prif Weithredwr, Cyngor Dosbarth Meirionnydd, Cae Penarlag, Dolgellau, Gwynedd LL40 2YB.

Dyddiad Cau:- 13 Chwefror 1984 (Post Cymraeg)

MEIRIONNYDD DISTRICT COUNCIL

ANALYST/PROGRAMMER

(for ICL ME29 installation)

SALARY SCALE SO1 £9,060-£9,660 per annum

The successful applicant will be expected to design new systems and be experienced in the use of RANGE COBOL, TME-TP and TME-RAPID software.

Most of Meirionnydd District is within the Snowdonia National Park and this post offers not only a rewarding appointment, but also the opportunity to live in one of Britain's most attractive areas.

Assistance with removal and other expenses in approved circumstances.

Application forms from the Chief Executive, Meirionnydd District Council, Cae Penarlag, Dolgellau, Gwynedd LL40 2YB.

Closing Date:- 13th February 1984 (1st Post)

(7480)

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

ROBOTS IN MANUFACTURING

Applications are invited for the post of RESEARCH ASSOCIATE to work on an SERC sponsored and industrially supported project which will concentrate on interprocesses control and industrial robots. Applicants should hold a good honours degree or equivalent preferably with industrial experience in digital systems of the design of production systems. The successful applicant may be permitted to register for a higher degree. The post is tenable for 30 months at a salary within scale £7,901 to £8,591. Write giving particulars to Dr R. H. Weston, Department of Engineering Production.

Loughborough *Leicestershire*

(7428)

BRUNEL UNIVERSITY
Department of Computer Science

Advanced Course in Computer Science

Vacancies exist on the above course which runs one day a week for two years from October, 1984, and leads to a Certificate of Advanced Study or, for suitably qualified candidates (subject to a satisfactory dissertation submitted at the end of a third year) a

Master of Science

Three years' previous computing work experience is essential, and candidates should apply in writing to: R. T. Wood, Graduate Admissions Officer, Department of Computer Science, Brunel University, Uxbridge, Middlesex UB8 3PH

(7386)

UNIVERSITY COLLEGE, CARDIFF COMPUTING CENTRE

SYSTEMS PROGRAMMER

A vacancy exists for the following post in the Computing Centre. The Centre houses a Honeywell Multics system with twin processors, 12Mb of memory and a full supporting configuration. More than 100 terminals provide the principal means of access to Multics and the system is connected to the regional ICL 2980 at Bath, to the University of London Centre and to PSS.

A SYSTEMS PROGRAMMER is required to assist in the maintenance and development of the Multics system. Experience of PL/1 would be an advantage. The salary will be on the OR Grade 1B/1A scale (£9,310-£9,576/£7,180-£11,615). Duties to commence as soon as possible.

Applications (two copies), together with the names and addresses of two referees, should be forwarded to the Vice-Principal (Administration) & Registrar, University College, P.O. Box 78, Cardiff CF1 1XL, from whom further particulars are available. Closing date 17th February, 1984. Ref: 2742.

(7485)

BRIGHTON POLYTECHNIC
Department of Computing and Cybernetics

1. **Senior Lecturer/ Lecturer II in Commercial Programming**
2. **Temporary Lecturer II in Computer Architecture (2 year contract)**

Required to reach on Honours Degree, HND and Professional courses in a large computing department.

Applicants for the Commercial Programming post should have experience in the design and implementation of Application Systems in a commercial or administrative environment.

The temporary lecturer in Computer Architecture must have a relevant Honours Degree with knowledge of hardware, low level software and interface design.

Salary: Senior Lecturer £10,583-£13,443
Lecturer II £7,215-£11,568

Application forms and further details from the Personnel Officer, Brighton Polytechnic, Moulsecoomb, Brighton BN2 4AT. Tel: Brighton 693655, ext. 2837.

Closing date: 27 February, 1984.

(7426)

NORTH EAST THAMES REGIONAL HEALTH AUTHORITY

PROGRAMMER/ ANALYSTS

Harold Wood, Essex

This is an opportunity for Programmers with at least two years experience to join teams working on a number of interesting on-line projects.

We have an immediate requirement for two to join the team developing and implementing the Regional Pharmacy System on PDP 11 computers using the MUMPS interactive language. The positions are based at the Regional Computer Centre at Harold Wood, near Romford, Essex and offer:-

- Starting salary to £10,000 depending on experience
- Interesting projects
- Training and development
- Annual salary reviews and scale increments
- Good working conditions
- 36 hour flexible working week
- Pension scheme.

To arrange an informal discussion or to request an application form please contact Eddie Evans, Regional Computer Centre, Harold Wood Hospital, Gubbins Lane, Harold Wood, Romford, Essex. Tel: Ingrebourne 71821.

(7464)

STAFFORDSHIRE POLICE

SYSTEMS ANALYST

£9,945 - £10,539

and

COMPUTER PROGRAMMER

£6,264 - £8,712

To work chiefly on the Operational Command and Central Computer System which is based at Police Headquarters, Stafford. The Systems Analysts will act as Deputy to the Principal Computing Officer.

Staffordshire Police is one of the foremost innovators in U.K. Police Computing, and have pioneered the development of a number of important operational computer facilities.

The successful applicants will have extensive experience of on-line, real time computing, with a minimum of 5 years in the industry. A knowledge of Ferranti Argus 700 computer architecture and of programming language Coral 66 would be an advantage.

Application forms, returnable by 6th February, 1984, and further details available, on request, from: **The Chief Constable, Staffing Department, Staffordshire Police, Chief Constable's Office, Cannock Road, STAFFORD ST17 0QG. Tel: Stafford 57717, Ext. 215.**

(7359)

HOLDERNESS BOROUGH COUNCIL
FINANCE DEPARTMENT

ANALYST/PROGRAMMER

Applications are invited for the above post from qualified and experienced persons as Section Head of the Computer Section of the Finance Department. The Council is using on-line services from the County Council's Honeywell Level 66 Computer. A knowledge of Cobol and Honeywell operating systems will be an advantage.

The successful applicant will be in charge of a staff of four and will be responsible for the control and co-ordination of the operational activities of the Computer Section.

Salary within Scale 6/SO1 (£8146-£8860). Assistance is available with removal and relocation expenses in appropriate cases.

Apply in writing with full c.v. to The Director of Finance, Council Offices, Skirlaugh, Hull HU11 6HN by 3rd February, 1984.

(7397)

WEST SOMERSET DISTRICT COUNCIL

APPOINTMENT OF DEPUTY COMPUTER MANAGER

Scale 5/6 (£7,191-£8,712)

Applications are invited from suitably qualified and experienced persons for the above position. Applicants should preferably be experienced RPG2 programmers wishing to gain wider experience of system development and planning. Five day week Twenty working days' annual leave. Assistance with housing accommodation in accordance with the council's scheme. Reimbursement of removal and associated expenses up to £1,000 in approved cases. Casual user car allowance.

The successful applicant will have the opportunity to live and work in one of the West Country's premier seaside resorts adjoining the Exmoor National Park.

Application forms and further details may be obtained from the Council's Treasurer at 37 Blenheim Road, Minehead, to whom all applications should be submitted by 20th February, 1984.

H. CLOSE
Chief Executive Officer and Clerk

Council Offices
20 Fore Street
Williton
TAUNTON TA4 4QA

(7431)

UNIVERSITY OF LONDON
CENTRAL INFORMATION SERVICE

SENIOR PROGRAMMER

CIS is a part of the Library Resources Coordinating Committee of University of London, and has just been awarded a research project to develop a prototype microcomputer-based expert system for library use. We are looking for a Senior Programmer to take part in the development of this system. Applicants should have experience of designing, writing and testing computer programs in one or more of the main languages (e.g. Pascal, 'C'). Knowledge of a high-level language such as Prolog, Lisp or Logo would be an advantage. Familiarity with microcomputer systems would be preferable.

The initial appointment will be for 18 months, commencing as soon as possible. Salary is negotiable.

Further information can be obtained from:

Mrs A. Vickery, CIS, University of London Senate House, Malet Street London WC1E 7HU
Tel: 01-636 8000, Ext. 3088

(7377)

Hereford and Worcester County Council

REDDITCH COLLEGE

Department of Technology
Computer Unit

LECTURER

(GRADE 2)

COMPUTING

Required as soon as possible a Lecturer in Computing, Data Processing, Programming and Computer Studies on courses leading to BEC and Higher BEC and Professional Qualifications, BEC/TEC Diploms in Computer Studies, TEC and Higher TEC and other computer courses.

Applicants must possess a degree or equivalent professional qualification preferably with recent commercial and/or teaching experience.

Commencing salary within L.II range £7,215-£11,568 dependent upon age, qualifications and experience.

Further details of this post, together with application form, may be obtained from:

The Principal, Redditch College, Peakman Street, Redditch, Worcs B98 8DW. Telephone: Redditch 63807.

(7383)

Computer Operator

£6,891-£8,523 p.a. inc.
+ 14% allowance for two-shift working

An attractive opportunity to join a friendly team of operators at the Polytechnic's Bounds Green, N11 location.

Experience of computer operations work is expected, preferably in a teaching, commercial, scientific or technical environment. DEC-10 experience would be particularly welcome.

Our Bounds Green location is an exciting new building, close by the North Circular Road, Piccadilly line and BR stations. You would enjoy 26 or 27 days' leave a year, and free use of Polytechnic's academic and leisure facilities.

Write quoting ref: N124/N148B for further details and an application form, posting first-class to: Personnel Office, Middlesex Polytechnic, 114 Chase Side, London N14 5PN.

Closing date: February 6.

(7402)

Middlesex Polytechnic

CROSSWORD

Solution to Prize Crossword No. 48

This month's first prize of £10 goes to Terence O'Gorman, senior programmer at the Allied Irish Investment Bank in Dublin. Second prizes of £5 each are on their way to Marion Cowen, systems analyst at the Cleethorpes, Grimsby and Scunthorpe Computer Committee; and John A. Kaye, analyst programmer at DRG North London Computer Services.

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Small development team needs a Senior Analyst/Prog/Project leader.

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UNIVERSITY OF SURREY

ANALYST/PROGRAMMER — DATA PROCESSING

The Data Processing Section of the Computing Unit has a vacancy for an Analyst/Programmer to develop systems for the University's Administration and Library. The successful applicant will develop systems on a variety of computer equipment, programming in Cobol

Applicants should have proven programming ability and a degree or equivalent qualification

The appointment will be made on the Computer and Other Related Staff IA salary scale, (£7190 £11615 per annum), according to age, qualifications and experience.

Further particulars are available from the Staff Office, Guildford 571281 extension 776.

Applications in the form of a curriculum vitae (2 copies) including the names and addresses of two referees should be sent to the Staff Office, University of Surrey, Guildford, Surrey GU2 5XH, by 10 February, 1984 quoting reference 208/CW.

(7298)

PERMANENT

Programmers **Central London** **£11K**

Minimum two years' experience IBM 34, 36 or 38, RPGII or III, £11K
Project Leaders/Consultants with good DP experience, £Neg
Banking or insurance preferred. Above to work in areas of Dev, MKTG or Quality assurance.
All applicants must be willing to travel abroad at short notice. Ref: 387/DF

Prog./Technical Support **Central London** **£12K NEG**

Graduate preferred, minimum three years' COBOL programming experience with ability to communicate effectively at all levels. To design interrogation packages for users, prepare and present in-house training courses and provide technical support. Opportunities for some travel. Ref: 388/DF

Project Leader/Programmer **City** **£11K NEG**

Minimum two years' experience for conversion of IBM PC micro computer network, must be able to communicate effectively and aid promotion of product. Opportunities to learn micros, gain banking skills and, in future, transfer to USA if desired. Ref: 389/DF

Programmers **Worcester** **£NEG.**

(a) Good experience of VAX/PASCAL. Must communicate effectively as working with the users.
(b) Good experience of DEC PDP11 or VAX with PASCAL, CORAL or FORTRAN. Radar experience an advantage.

Ref: 390/DF

Contact Diana Fabregas at KPG or 01-789 8714 (evening or weekends)

Analyst/Programmer **Essex** **£8,500 to £12,000**

Nationwide manufacturing company seek ambitious Analyst/Programmers with minimum 3 years' experience of working in an IBM 4341 environment running under DOS/VSE, CICS and DL/1. Fluency in COBOL is pre-requisite together with experience of Librarian. If you enjoy working in a team, can absorb pressure and possess good communicative skills that is the position for you. Ref: 8205/HP

Systems Programmer **Wiltshire** **To £11,000**

A minimum three years' experience of Systems Programming on ICL or DEC Hardware with sound knowledge of FORTRAN and COBOL could qualify you to enter an exciting environment with our client — a household name in the publishing field. Ref: 8359/HP

Hardware/Software Engineer **Hants** **£7,000 to £16,000**

Our client, a rapidly expanding company specialising in the manufacture of Communication Hardware, require quality personnel with an electronics background. Experience on Intel Z80 micros and Disc interfacing together with familiarity in a R and D environment are pre-requisites. Ref: 8385/HP

Data Processing Manager **Herts** **Min. £12,000**

Electrical manufacturing company require DPM with sound fluency in RPG II on an IBM system 34. Experience of MAAPICS together with sound communications skills will qualify you for entry into a dynamic user-orientated environment. Ref: 8383/HP

Contact Haydn Parry at KPG

Analyst Programmers **Surrey** **£10K**

Good commercial background is required by this company who are currently looking for an Analyst Programmer to work on their ICL ME29. You should possess solid programming experience with at least one year at Systems level in an on-line environment. Ref: 8368/PH

Analyst Programmer **Bucks** **c£12K+ Car + Bonus**

This job involves talking to customers about new systems/enhancements etc and providing support after successful implementation. You should be self sufficient with good COBOL experience and will be working on Honeywell level 6. Ref: 8346/PH

Programmer /Analyst **West Sussex** **c£9,500K+ Bonus+ Relocation**

This small DP department are currently looking for a COBOL programmer with a minimum of two *years' experience in an on-line environment, preferably on the Honeywell Level-6.* Ref: 8362/PH

Cobol Programmers **Surrey** **c£8K to £10K**

Two programmers with a minimum of 12 months' solid COBOL required for development work on *Burroughs B1000 series.* Ref: 8366/PH

Contact Peter Hennessey at KPG or 0293 516322 (evenings or weekends)

A large DOS/VSE, CICS, DL/1 installation in West London require the following staff:

Software Manager — to supervise D/Base and Support Group — c£18,000
Systems Programmer — solid DOS/VSE experience — Negotiable
Database Co-ordinator — experienced DL/1 (or IMS) person — c£15,000
Jnr Systems Prog. — for statistical analysis work in support group — c£10,500

Contact David Mason Johns at KPG or 01-747 0969 (evenings or weekends)

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Last year the company once again enjoyed considerable success with the top echelon of the sales force earning in excess of £50,000, due not only to effective selling, but also aided by a high level of pre- and *post-sales support and low staff turnover — the hallmark of a happy company!*

This continuing expansion has consequently created a demand for additional sales people in

LONDON & HOME COUNTIES
MIDLANDS & NORTH

We are therefore seeking a couple of sales people from a hardware systems or computer services background, who really understand industrial and commercial applications. This is an opportunity that will particularly appeal to talented sales people who feel that their potential is not really being achieved.

Our client offers a very attractive compensation plan with low sales targets and high earnings with a company car and guaranteed minimum first year earnings of around £20,000. Yet, this guarantee is not set against new business commission earnings!

Please contact Alasdair Scott, Lindsay Howle, or Mike Linford, quoting reference SSB/014.

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29 Oxford Street,
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Cathedral House, Beacon Street,
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Our client, a leading manufacturer of micro computers addressing commercial and industrial markets, is looking for professional salesmen for these divisions who can maintain his impetus and take full advantage of a product which has been supported by unparalleled commitment to design and development innovation, coupled with built-in reliability and quality.

If you are looking for a challenge and have goals for management measured by results, can develop markets by implementing sales and marketing strategies and so demonstrate your commitment for success, you will be rewarded both in financial and promotional terms.

Target for the top and join our client whose main aim is to be "No. 1" in all their activities. If you have a sales background with particular emphasis in selling to the dealer and O.E.M. markets, feel that you can take this important step forward for '84 and live in London, Home Counties or the Midlands, then call CLINTON HARDY-DAVIES on 01-543 4844. Ref. No. CHD.1342A.

STOP PRESS: Also looking for professional, commercial training person with experience of financial modelling, stock control, payroll, etc. It is a ground floor opportunity in a new division. Basic £10-12k + Car. Ref. No. CHD.1342B PLUS Micro Marketing, Commercial Application. Basic £18-20k + Car. Ref. CHD.1342C.

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Gresham Lion, a leading systems designer for both the MOD and commercial market are currently seeking an ambitious Sales Engineer who has already cut his teeth in the world of visual display terminals or other peripheral equipment.

We are looking for a professional man or woman who can talk to original equipment manufacturers and users fluently and knowledgably about our products and the need for incorporating them within a commercial environment.

You will be joining a successful team and because the North will be your exclusive territory it would be preferable if you lived in the Greater Manchester area.

We offer a very attractive salary package including a generous commission scheme, expenses and naturally a company car.

For more information please write to Richard Hancock enclosing a c.v. at Gresham Lion plc, Gresham House, Twickenham Road, Feltham, Middlesex.
Tel: 01-894 5511. (Out of hours 01-898 7177).

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SALES BIT

Quality of Management — 80

Knock your closest competition at your peril

"NEVER knock your competitors" is one of the oldest by-words of selling, but perhaps one that is misleading. However, there can be no doubt that the process is a minefield that should be avoided.

There is a tempting suggestion that belittling others automatically implies the enhancement of oneself.

It is unlikely that, in declaring the inadequacies of someone else a critic should wish to be considered as bad, or even worse.

It is implied that the accuser is above the failings he is pointing out. The stance is one of *superiority.*

That is dangerous ground where only facts can prevail, opinion is worthless, and relevance is an essential qualification.

However, I would not suggest that highlighting the weaknesses of competitors within the confines of the sales negotiation is an unacceptable process.

On the contrary, it is essential for every salesman to have a thorough knowledge of his competitors in terms of product shortfall, product advantages and self-cancelling benefits.

Armed with this information it is his responsibility to make the buyer aware of the inadequacies of competitors by emphasising exclusive advantages rather than competitive failings.

It is so easy to lose personal credibility by appearing jaundiced or anxious to exploit the problems or failings of others

"This device is not only essential if you are to succeed in solving your particular problem, but is also unique to our product."

Even so, the emphasis must be upon those facts which are relevant and significant without ever breaching the bounds of ethically acceptable conduct. This demands considerable discretion and sensitivity, for the line between positive and negative criticism is often a very fine one.

It is so easy to lose personal credibility by appearing jaundiced or anxious to exploit the problems or failings of others. The buyer is bound to ask himself how someone so apparently devoid of altruism will react if there are problems with the product once it is purchased.

What is it that tempts some sales *people into trying to pick up cheap* points from the competition by sniping, innuendo and other equally unattractive means?

For one thing it's easy, and for another it can give a buzz of smug satisfaction to those with an "I'm alright Jack" mentality.

How warm and secure it can feel to know that your main competitor is in trouble — product failings, financial difficulties and so on.

But the thinking salesman will ask himself: "How is the confidence of the buyer being affected by the problems of another supplier? Does he suspect that those problems may not be exclusive to that product?

"Does it help my situation more by highlighting our competitors' situation, not mentioning it at all, or even playing it down; and which approach will do most for enhancing the relationship between the buyer and myself?"

It is not uncommon for a buyer to lose faith in an entire marketplace due to the failure of a single supplier, because he sus-

"How is the confidence of the buyer being affected by the problems of another supplier?"

pects *the problem is fundamental* to the nature of the product. For sales people to feed such possible fears is a dereliction of duty and a serious breech of professional ethics.

People always suspect the motives of those who are anxious to decry the failings of others — the "holier-than-thou" syndrome.

Even the most generous of interpretations — anxiety, misconception, ignorance and the like — are equally unflattering, but the conclusions of the more cynical buyer — envy, malice, jealousy, stupidity, opportunism — could destroy the salesman's chances forever!

I hope I have said sufficient to distract you from the possible pursuit of abusing competitors. If I have laboured the point I do not *apologise.*

Indeed, I have even more to say about it in Chapter VII of my recent book*, for I regard it as an *important issue.*

Truth is no excuse either. Just because you know without question that you are stating a fact does not make it more acceptable to the buyer or increase your stature — quite the contrary.

People always suspect the motives of those who are anxious to decry the failings of others — the "holier-than-thou" syndrome

Is there anything more repugnant than someone who knows he is irrefutably right and damn the consequences? Being right does not give the right.

**All About Selling*, published by McGraw Hill, £8.95. Available from Trader Enterprises, c/o Sales and Marketing Services, 29 Oxford Street, London, W1.*

Alan Williams

PUZZLE ANSWER

If n equals the mystery base, then $n^3 + 2n^2 + 3n + 4 = 7,642$; or $n^3 + 2n^2 + 3n - 7,638 = 0$. From this equation we can say that n must be one of the factors of 7,638 (which are 2, 3, 19 and 67)

Clearly 19 is the most likely candidate, and further calculation confirms this to be the base involved.